

Chemical Week

Ethylene pinch: Esso fire squeezes high-purity supplies at Baton Rouge p. 23

Lure of Northern Ireland draws U. S. investors. Newest: Du Pont, Chemstand . . p. 37

New butane converter saves Shell plenty on equipment for capacity boost . . . p. 57

Acetic acid excess? For now, maybe, but new capacity will fill long-term need . . . p. 97

◀ Equations for effective ads: operations researchers' goal. Progress report p. 103

October 18, 1958

STEVENS RICE
UNIVERSITY MICROFILMS
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Ethylene Glycol	Ethanolamines
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OLIN MATHIESON CHEMICAL CORPORATION
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*TITANOX is a registered trademark for the full line of titanium pigments offered by Titanium Pigment Corporation.



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Petrochemicals*

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Chemical Week

TOP OF THE WEEK

OCTOBER 18, 1958

- ▶ **New competition in drugs, food processing, urea** presaged by debut of four new chemical firmsp. 25
- ▶ **Product "talent scout" looks for new specialties.** Object: commercial developmentp. 47
- ▶ **Standard of California counts on big maintenance meeting** to trim a \$70-million billp. 81

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17 BUSINESS NEWSLETTER

23 Despite fire-damage to its \$12-million plant, Esso guarantees ethylene deliveries to four major customers.

24 Vitro Corp. and Koppers join to snag weapons system contracts, coordinate research and production.

24 International Chemical Workers Union votes to proceed with merger plan, gives President Walter Mitchell second term.

25 Add four new names to CPI roster: Stauffer Pharmaceuticals; Century Chemical; SunOlin Chemical; Corn Products Co. Two are joint ventures, one is merger-born.

26 Revolution in freight rates? Congress will consider legislation to put all railroad freight rates on a single, weight basis, instead of by commodity.

26 One way to meet problems of Europe's "common market"—get inside tariff walls.

31 WASHINGTON NEWSLETTER

37 ADMINISTRATION

Chemstrand, Du Pont find Northern Ireland a good place for new manufacturing ventures.

40 Carborundum President Robinson takes political warpath to attack "New York business climate."

42 Royalties claim may force AEC to establish payoff pattern on inventions used by government.

47 SPECIALTIES

Want financial, sales help on a new specialty? "Talent scout" Paul Charlap is looking for projects.

48 Survey shows 1.1 billion yds. of cotton were resin-treated in '57. Expectation: 100% growth in resin use this year.

52 New aircraft carrier uses 30,000 gal. of fire-resistant hydraulic fluid in deck elevators.

57 ENGINEERING

Shell unveils new reactors that boosts yields, cuts costs of liquid-phase butane isomerization.

61 Babcock & Wilcox engineers develop new control and coolant techniques to improve nuclear reactor efficiency.

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Antibiotic list augmented by new broad-spectrum drug revealed at Washington meeting.

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Maintenance cost-cutter? Standard of California holds company-wide conference to improve maintenance-production communications.

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97 MARKETS

New acetic acid capacity: Celanese's expanded plant will concentrate on supplying production of acetyl derivatives.

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Operations research yields equations describing effectiveness of advertising.

110 CHARTING BUSINESS

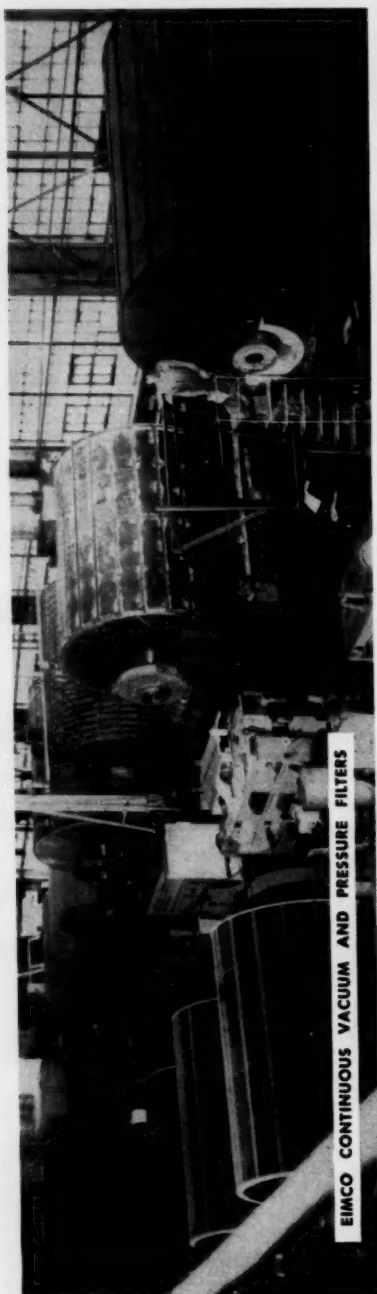
Use of aluminum in automobiles will hit new high in '58; and further gains will be made in next few years.

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No. 16

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We hope that this typical view of one of Eimco's assembly bays will prompt you to enquire "Why is the Eimco factory the largest of its kind in the building of pressure and vacuum filters?" We believe the answer to be that more users have found that Eimco's combined facilities — research and development, completely integrated manufacturing, and unsurpassed service — make the investment in Eimco filters sound and economical.

B-358

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OCTOBER 18, 1958

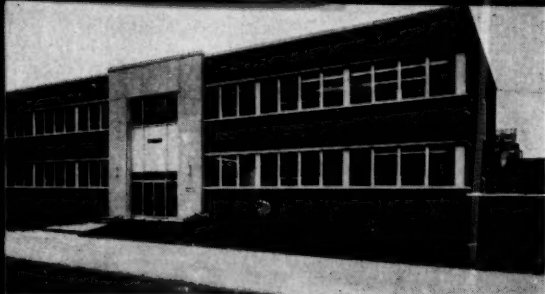
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THE BUSINESS MAGAZINE OF THE CHEMICAL PROCESS INDUSTRIES



Research Laboratory

for Improved Production

of esters, amides, ketones, peroxides,
ureides and many other acid derivatives

Available carload, less carload

ACID CHLORIDES

Acetyl Chloride
Azelaoyl Chloride
Butyroyl Chloride
Caproyl Chloride
Capryloyl Chloride
Cinnamoyl Chloride
Isobutyryl Chloride
Lauroyl Chloride
Myristoyl Chloride

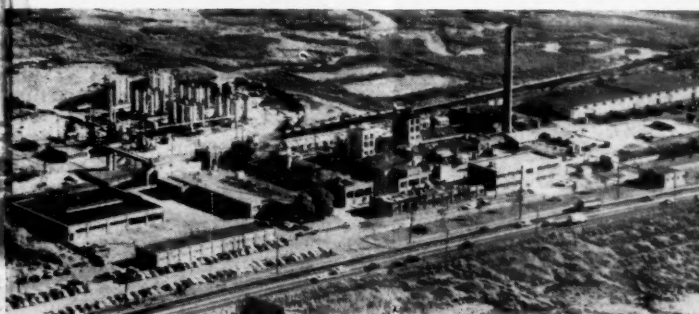
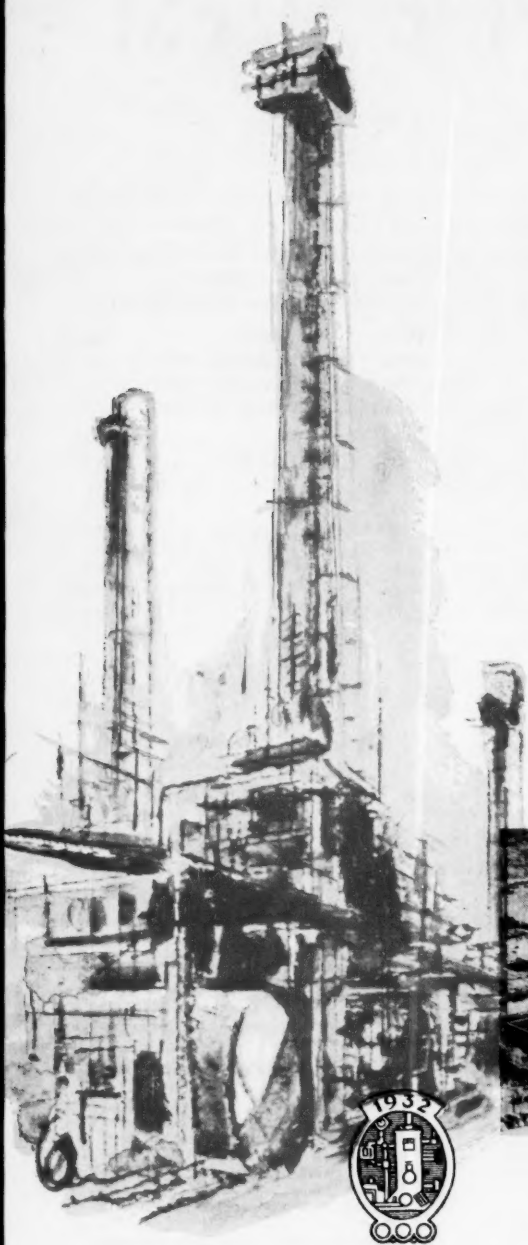
Oleoyl Chloride
Palmitoyl Chloride
Palargonyl Chloride
Phenylacetyl Chloride
Propionyl Chloride
Sebacoyl Chloride
Stearoyl Chloride
and
others, made to order

INTERMEDIATES

Acetaldehyde Ammonia
Acetophenone
Anisic Aldehyde
Anisyl Acetone
Anisyl Alcohol Tech.
Anisyl Chloride
Anisyl Cyanide
Benzalacetophenone
Benzhydrol
Benzhydramine
Benzhydriyl Chloride
Benzophenone Tech.
Benzyl Alcohol Tech.
Benzyl Cyanide
n-Caproic Acid
p-Chlorobenzophenone
p-Chlorobenzhydrol
p-Chlorobenzhydriyl Chloride
p-Chlorobenzyl Cyanide
Dibenzyl Ether

Dicyclohexyl Carbinol
Dicyclohexyl Ketone
p,p'-Dimethoxybenzophenone
Diphenyl Acetone (unsym)
Diphenyl Methane
Ethyl Formate Tech.
Ethyl Phenylacetate
beta Ionone
Isovaleric Acid
p-Methoxy Phenylacetic Acid
Methyl Heptenone
Methyl Phenylacetate
Phenylacetic Acid
Phenylacetone
Phenyl Propyl Alcohol
Potassium Phenylacetate
Propiophenone
Sodium Phenylacetate

And Other Intermediates



THE TRUBEK LABORATORIES
EAST RUTHERFORD, NEW JERSEY

NOW! KAISER ALUMINUM OFFERS A WIDER SELECTION OF STANDARD PIPE SIZES!

Kaiser Aluminum's new, expanded selection of standard* pipe sizes puts you in line for a better-than-ever deal in aluminum piping systems.

Now available in standard sizes—with no special tooling required—are: A.S.A. Schedules 5, 10, 40 and 80; plus heavy duty construction, mining and petroleum pipe, and light weight construction pipe.

Wider Selection Can Save You Money

This broad range of standard pipe sizes gives you a wider choice of proper wall thicknesses for the pressures involved in your piping system . . . a choice that can save you money.

For example, suppose your present low pressure system is made up of traditional A.S.A. Schedule 40 galvanized steel pipe, and rust, corrosion and wear make replacement necessary. If the heavier thickness of Schedule 40 pipe isn't required for the pressures involved, now is the time to consider aluminum.

By choosing either A.S.A. Schedules 5 or 10 Kaiser Aluminum pipe in standard sizes, you can save up to 30% of the price of Schedule 40 steel.

Save Money On Maintenance

A piping system of Kaiser Aluminum looks clean and bright when installed, retains its handsome appearance year after year. Unlike steel pipe, aluminum can't rust,

never needs painting. Maintenance expenses are held to a bare minimum.

Your Kaiser Aluminum Distributor has full details on the money-saving advantages of lightweight, corrosion resistant aluminum pipe, as well as complete information on availabilities.

Profit now from his expert technical knowledge, extensive warehouse facilities and prompt delivery service. You'll find the distributor located nearest you listed below.

Kaiser Aluminum & Chemical Sales, Inc., 919 No. Michigan Avenue, Chicago 11, Illinois.

*Your Kaiser Aluminum Distributor can also supply aluminum pipe outside the range of products in standard A.S.A. Schedule sizes, plus non-standard A.S.A. Schedule number and Modified Wall sizes. He also makes available Kaiser Aluminum internally clad or coated pipe for applications requiring extra corrosion resistance.



THE BRIGHT STAR OF METALS

KAISER ALUMINUM PIPE DISTRIBUTORS SERVING PETROLEUM AND MINING INDUSTRIES

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GRAND JUNCTION, COLORADO
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FAIRMOUNT, WEST VIRGINIA
Fairmount Supply Company

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LOGAN, WEST VIRGINIA
Keystone Construction Co.

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Dunigan Tool & Supply Co.

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BUFFALO, NEW YORK
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HONOLULU, T. H.

Honolulu Iron Works

Permanent Cement Co.

HOUSTON, TEXAS

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Standard Brass & Mfg. Co.



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Hubbell Metals Inc.

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WICHITA, KANSAS

General Metals, Inc.

BASIC CHEMICALS making profit news

Sometimes new developments in basic commodity chemicals are not immediately made known to potential users. But with the profit squeeze pinching budgets and dividends tighter and tighter, this advertisement (and others to follow) hopes to speed up the process of spreading good news. The news items on these two pages are designed to help you keep your finger on what is happening in the world of new uses for established, well-known chemicals—as well as keeping you up to date in the world of new chemicals.

You may wish to check certain items in this advertisement and forward to those concerned in your company.

Route to:

GLYCOL ETHERS SOLVE TOUGH CASES

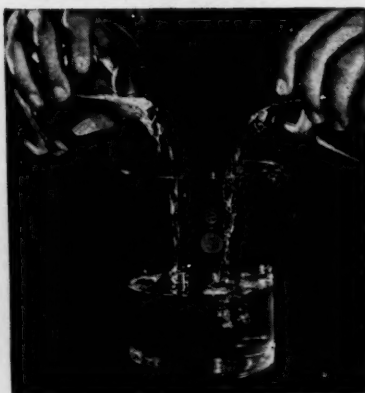
Specialized solvent problems, long a major plague of fast changing formulations, are bowing to the unusual versatility of glycol ether solvents. Dow now offers industry an ethylene and propylene series of glycol ethers (trademarked Dowanol) that promises to dissolve many headaches by saving both dollar-precious time and research-precious dollars.

A recent TV late, late movie featured a scientist who discovered the "Universal Solvent". It dissolved the universe. Dow's increasingly popular Dowanol® products aren't *that* good—but they are versatile!

They combine the best of the solubility characteristics of alcohols, ethers, and hydrocarbons. And they have a remarkable range of boiling and pour points. Small wonder they find application in many diverse areas of chemical processing. For example . . .

Take hydraulic brake fluids. Almost two tons of speeding automobile are controlled by the brake drums through the brake fluid. A recent "AAA" bulletin warned that the use of sub-standard fluids was creating a serious safety problem . . . in fact, twelve states have already legislated against it. Recent changes in car-making—increased horsepower, greater weight, automatic transmission, smaller wheels—have all combined to raise the temperature to which brake fluids are subjected.

That's where Dowanol products



Excellent solubility, with both organic compounds and water, marks Dowanol products as extremely versatile.

come in. They help manufacturers of hydraulic brake fluids to obtain formulations with a high boiling point and favorable viscosity characteristics and also hold fluid ingredients in phase over a wide temperature range.

Now paints and lacquers don't blush like they used to, thanks to Dowanol. Blushing used to occur because of a deficiency of active solvent in the

lacquer formulations. This would cause partial precipitation of nitrocellulose during drying. The lackluster result: dull finish and pinholing. Because of their exceptionally powerful solvent power toward these components, Dowanol glycol ethers minimize and often prevent this.

Or take "orange peel", a condition in which the surface of lacquer resembles the texture of an orange skin. Dowanol in the formulation overcomes it . . . easy as peeling an orange.

"Let Dowanol do it", is the watchword in dozens of industries that have solvent problems. Dowanol products are used by manufacturers of textiles as dye solvents, manufacturers of ink solvents, dry cleaning solvents, spotting fluids, soluble oils, rust removers, cosmetics, metal parts cleaners, liquid soap ingredients . . . in almost any product where high solvent action and low evaporation rate are essential. (An added plus: both the ethylene and the propylene series of Dowanol products have a low degree of toxicity—present no serious health hazards.)

Best proof that more and more chemists feel that Dowanol products pro-

DOW CHEMICALS basic to the chemical processing industry

Alkylene Oxides, Glycols • Industrial Preservatives • Polyalkylene Glycols • Glycol Ethers • Alkalies • Phenolic Compounds • Brominated and Chlorinated Aliphatic Compounds • Inorganic Acids • Halogens • Organic Acids and Esters • Inorganic Chlorides, Bromides and Bromates • Nitrogen Compounds • Amino Acids • Glycerine • Salicylates • Phenyl Phosphates • Heat-Transfer Media • Flotation and Flocculating Agents • Chelating Agents • Ion Exchange Resins • Methylcellulose • Magnesium • Plastics • Aromatics

vide more and more answers to tough solvent problems is the recent announcement from Midland that Dow is doubling production of these chemicals to meet the fast growing demand.

DOWICIDE:

How white is your white?

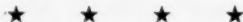
RIDDLE: When is *white* shoe polish *brown*? **ANSWER:** When bacteria and/or fungi cause decomposition and color change. This actually happened to a nationally-known manufacturer of shoe polishes. After his liquid white polish was bottled for a few weeks it would turn brown—either on the supermarket shelf or in the home.



Dazzling white puts a polish on sales.

Product doctors were called in. They recommended the addition of a DOWICIDE® preservative to the formula. **RESULT:** "Color problem licked. Product now whiter than snow . . . doing just fine saleswise, too!"

Thousands of other organic compounds, polishes, floor waxes, starches, laundry products, are protected from bacterial or fungicidal breakdown by DOWICIDE preservatives. There is a whole family of DOWICIDE products . . . 14 of them, at last count, each with special properties for different protective jobs. Dow has prepared brochures that describe them and their myriad applications. The answer to a product breakdown problem might be at the other end of a phone call.



For further information on these products and other Dow chemicals, write THE DOW CHEMICAL COMPANY, Midland, Michigan, Chemicals Sales Department 7518-1

YOU CAN DEPEND ON



CHLOROTHENE: Sprays away high aerosol costs

Today's profit-minded aerosol men praise the big "package" of advantages offered by the new solvent, Chlorothene® (Dow 1,1,1-trichloroethane, inhibited). It's tops as a replacement for propellants. Case in point: The use of Chlorothene as a vapor pressure depressant in hair sprays where it does double duty as a solvent for active ingredients; in some formulations it eliminates the need for additional solvents. In others, it serves as

the "active" ingredient (as in spot-remover formulations).

Many aerosol formulators employ Chlorothene to good advantage because of its low toxicity, high stability, no appreciable fire hazard, and not unpleasant odor. Some salesworthy examples: moth-proofing, insecticide and waterproofing formulations. Best of all, it offers these quality product pluses at an actual saving in cost over more expensive fluorinated compounds!

Putting MORE PROFIT in your products . . .

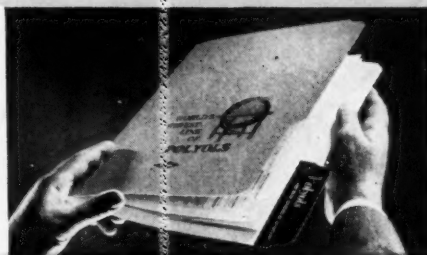
Bromine

First Dow product (1897). Vast experience in technology and production of bromine and brominated products. Result: Dow unequalled as source of supply.



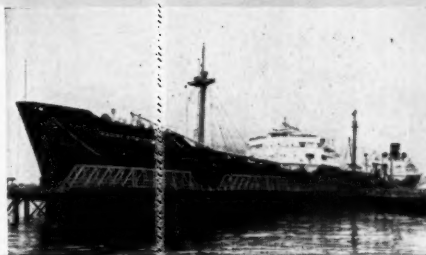
Polyols

"The Men That Make the Most of Them" recommend "World's Widest Line of Polyols" folder. Details included on polyols as well as literature bibliography.



Hydrochloric Acid

Water transportation pioneered by Marine Dow-Chem and HCL. Vast network of terminals and shipping points assures quality product delivery on time, in time.



Ethanolamines

New booklet describes latest information on handling and storage as well as detailing improved color characteristics of Dow's triethanolamine.



OPINION

Packaged Plants

TO THE EDITOR: In that Monsanto is the world's largest designer of contact sulfuric acid plants, and to a lesser extent of chlorine plants, we are concerned that we are not listed in the CW Report about packaged plants (Sept. 20). If we had been asked for data, we would have supplied the following for tabulation in Mr. Mahoney's article:

Packaged Plants Available:	Sulfuric acid	Chlorine-caustic
Main Products:	Sulfuric acid	Chlorine-caustic
Number of Installations:	Over 300	39
Capacity:	5-1,000 tons/day	3-275
Plant Prices Per Output Unit:	\$3000-6000	\$60,000-90,000
Remarks:	Prices do not include unusually small units.	

The above plants are actually built by the Leonard Construction Co. and various associated foreign contractors. The chlorine plants are of joint Monsanto-DeNora design.

It is debatable whether any sulfuric acid or chlorine plant can be properly designated as a packaged plant; however, the above Monsanto plants come as near to that classification as others in the same field.

C. M. DEAN
Director of Engineering Sales
Monsanto Chemical Co.
St. Louis

Correct Antihistamine Data

TO THE EDITOR: In your article on production of antihistamines (Sept. 27, p. 88), quoting total production of these materials in '57 as reported in the U.S. Tariff Commission's preliminary report on medicinals, the figure published by the commission is incorrect due to the classification of certain materials as antihistamines that are not antihistamines. The correct figures for '57 should be: production, 232,000 lbs.; sales, 94,000 lbs.; value, \$3,050,000.

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: H. C. E. Johnson, Chemical Week, 330 W. 42nd St., New York 36, N.Y.

We regret this error . . .

In this article, you state that the commission's latest synthetic organic chemical report lists 17 manufacturers of antihistamines in '57. The commission has not published a list of manufacturers in '57 as yet. The figure you give is for '56. . . .

. . . The corrected figures for antihistamine production and sales will appear in the commission's final report on production and sales of synthetic organic chemicals for '57, which will probably be published in November.

JAMES H. HIBBEN
Chief, Chemical Division
United States Tariff Commission
Washington, D. C.

No Consumer Products

TO THE EDITOR: We have noted the discussion (Aug. 30, p. 14) regarding the relationship between Pacific Vegetable Oil Corp. and Polytron Corp.

We feel that this statement is misleading since it creates the impression that Pacific Vegetable Oil Corp. will be producing these new [urethane] materials. This is not the case; our company is continuing to maintain its usual policy of producing and selling raw materials and semifinished goods to other chemical firms. We do not have the organization necessary to handle consumer products nor do we wish to compete with our own customers.

JOSEPH R. SMITH
Secretary
Pacific Vegetable Oil Corp.
San Francisco

MEETINGS

Salesmen's Assn. of American Chemical Industry, annual sales clinic, Roosevelt Hotel, New York, Oct. 20.

American Coke and Coal Chemicals Institute, annual meeting, The Greenbrier, White Sulphur Springs, W. Va., Oct. 20-21.

American Institute of Chemical Engineers, New York section, all-day symposium; topics: cost engineering, trade secrets and patents, petrochemicals, fermentation; Statler Hotel, New York, Oct. 23.

Assn. of Consulting Chemists and Chemical Engineers, 30th annual meeting; theme: what's new in chemistry; Biltmore Hotel, New York, Oct. 28.

VIEWPOINT

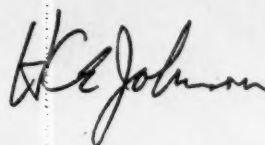
DRAFTERS of the new food additives law, whatever their sins might have been (and most food and chemical people agree they've been few), have certainly shown one strong virtue. They've resisted what for a number of years has seemed almost a national phobia against mixing "chemicals" and "foods."

In a recent speech, Bernard Oser, head of New York's Food and Drug Research Laboratories, pointed to the fact that world population is expected to triple within the next 100 years, a rate with which food production by current methods, can't hope to keep up. The danger has been, he suggested, that a squeamish public might reach out and slap down the hand of science just when it finds itself within reach of a solution.

The time will have to come when chemical plants not only will produce additives for foods but also will have to produce the food itself. Recent laboratory work indicates that the day might not be too far off when we will be able to produce synthetically the essential amino acids, fats and carbohydrates necessary to keep millions of people alive. Yet, if the public and government should learn to dread chemical names, bold food research in this country could be discouraged, leading to a dangerous slowing down in the race against starvation.

If some of the current over-meticulous attitudes had been applied to foods in past years, chances are we wouldn't be eating many of the things we enjoy now. (One old quip is that the bravest man in history was the first to eat an oyster.)

We surely aren't suggesting a return to the use of man as a guinea pig, or abandonment of government protection for consumers. We just want the government to make sure that its very protection doesn't ultimately prove more dangerous for the survival of the race than the things we're being protected against.



Editor-in-Chief

What happened to the ring around

When rain falls upon the earth it seeps down through the soil and rock strata, picking up calcium, magnesium and sodium salts. It is this leaching process that makes our water "hard."

When ordinary soap is added to this salt-laden or "hard" water, calcium and magnesium combine with the soap to form insoluble compounds which are deposited as a scum or ring around the bathtub. The sodium compounds remain in solution. If the calcium and magnesium could be exchanged for sodium in these compounds there would be no ring.

There is a way, using a sulfonated synthetic resin made from coal chemicals. The resin ions are linked with sodium. When hard water is trickled through the resin, the resin trades its



Sales Offices in Pittsburgh, New York, Chicago, Salt Lake City and Fairfield, Alabama



the bathtub?

sodium ions for calcium and magnesium ions. The emergent water contains nothing but sodium compounds, which remain soluble after soap is added. There's no scum, no ring and you use a lot less soap. A fairly new development has been the addition of sequestering agents to soap. These compounds also form soluble magnesium and calcium products and eliminate scum. There are also many detergents which contain or act as sequestering agents.

Some important synthetic ion-exchange resins start with USS One-Degree Nitration-Grade Benzene. For more information on Benzene, write to United States Steel, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

USS is a registered trademark

Life on the Chemical Newsfront



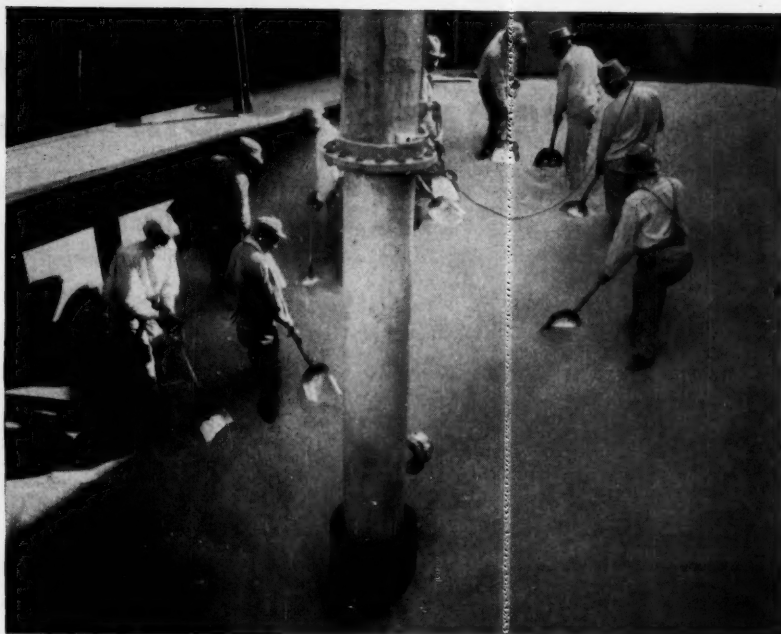
NEW SURFACTANT IMPROVES EMULSION PAINTS. AEROSOL® TR surface active agent has a very high oil solubility and is particularly effective for oil-in-water emulsions. In emulsion polymerization, it offers an unusually wide working range of concentration from 0.05% to 1.0%, and produces small emulsion particles in a very narrow particle size range of 2 to 3 microns. At an optimum concentration of 0.1% to 0.5%, the emulsion formed is stable and of low viscosity. AEROSOL TR produces high rub resistance and storage stability in paint formulation, and provides excellent water resistance in the dried film. (Industrial Chemicals Division)



NEW STEP IN MINIATURIZATION is Underwood Corporation's telephone-size, 7½-pound adding machine, with its two-piece housing molded of CYNAC SUPER® 201 methylstyrene-acrylonitrile copolymer plastic. This unusual thermoplastic was selected because of its toughness, surface hardness and resistance to heat, staining and denting. It is unaffected by the diester permanent lubricant applied to the mechanical assembly prior to encasement in the housing. The color, in two attractive tones, is molded in and will not crack, chip or wear off. (Plastics and Resins Division)
*Trademark

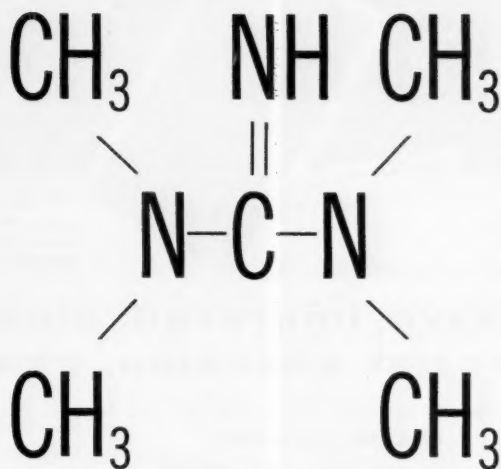
GRAIN GOING INTO STORAGE this year can now be protected against insects by Cyanamid's broad-spectrum insecticide, *malathion*, recently cleared by the United States Food and Drug Administration for direct application to grain after extensive research and almost two years of commercial use in Canada. Malathion has proved highly effective in providing continuous protection over long periods against major pests which infest storage bins. The small amount needed makes it economical to use and also presents no residue problems. Malathion can be applied directly to grain in both sprays and dusts, and used as clean-up sprays in and around both commercial elevators and farm storages.

(Agricultural Division)



ACTIVE PEOPLE can now find protection against objectionable perspiration odors developing in sports wear and other clothing made of cellulosic fabrics and blends. Perspiration has no offensive odor until after it undergoes decomposition by certain bacteria. Cyanamid's *CYANA® purifying agent*, applied to textiles at the mill, controls the growth of these bacteria on fabrics, keeping garments fresh. It maintains protection through many launderings, often for the life of the garment.

(Organic Chemicals Division)



A NEW CYANAMID CHEMICAL, *tetramethylguanidine* (TMG), offers advantages as a catalyst for base-catalyzed reactions, as a chemical intermediate, and as a special solvent. A liquid with a slight ammoniacal odor, it boils at 159-160° C. TMG has a base strength comparable to sodamide and has the advantage of being soluble both in water and the common organic solvents. Since it is a liquid, it can be easily and accurately measured. Base-catalyzed reactions can therefore be run in a homogeneous medium. TMG can be used to catalyze cyanoethylation reactions and the reaction of phosphine with unsaturated compounds to yield complex organophosphine derivatives.

(Market Development Department)

CYANAMID

AMERICAN CYANAMID COMPANY
30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

For further information on these and other chemicals, call, write or wire American Cyanamid Company

October 18, 1958 • Chemical Week

15

ALKYDS REACTED WITH NEW SILICONE INTERMEDIATE SHOW 50% BETTER WEATHERING



Trim point at left is a high quality commercial alkyd-based coating; that at right is based on a silicone modified alkyd.

**have improved gloss and color retention;
resist checking, chalking . . .**

WEATHER RESISTANCE

The following results were obtained on white paints made from a commercial alkyd. Paint formulations were identical except for silicone content.

Percent Z6018 (vehicle N. V.)	% Gloss (Gardner 60° Glossometer) after weatherometer testing			
	0 hrs.	300 hrs.	600 hrs.	900 hrs.
0	80	70	53	5
25	90	87	70	50
50	85	83	75	70

Maintenance finishes and trim paints can be given much greater weather resistance with silicone-modified vehicles. Dow Corning Z6018 Resin Intermediate, reacted with air-drying alkyds, increases weatherability of the alkyd by 50 to 100%. Yet this is achieved with a relatively small percentage of Z6018: only 25% of the finished vehicle, on a non-volatile basis. Cooking procedures are standard, and the Z6018 may be reacted either with an existing alkyd or at the start of the alkyd preparation. Alkyds may be of short to long oil length, of linseed, soya or tall oil, and may be styrenated.

Z6018 also improves the heat and moisture resistance of epoxy and other resins for electrical purposes. Send for free one-pound sample and 16 page data notebook. Dept. 3310.



Dow Corning CORPORATION
MIDLAND, MICHIGAN

Business Newsletter

CHEMICAL WEEK
October 18, 1958

Heavily traded chemical stocks last week found favor in a booming market that ticked off four new highs in the five days of trading. One big factor: increasing optimism about CPI prospects for '59.

Especially active: Olin Mathieson, which gained $2\frac{3}{8}$ points on 181,400 shares traded. Wall Streeters credit OM's surge to two factors: (1) plans to write off the last of its aluminum plant startup costs this year (*CW Business Newsletter*, May 24); (2) generally brightening outlook for aluminum.

Another big gainer was Monsanto, which tacked on $3\frac{1}{2}$ points in heavy trading. One experienced broker explains it this way: "Last summer, Monsanto was selling for around 35, didn't move as quickly as other chemical stocks. Now it's beginning to make up the lag." (Price at press time: $38\frac{7}{8}$.) Chemstrand—half owned by Monsanto—is showing big earnings gains, should help boost Monsanto's year-end profits.

Allied Chemical, which has shot up $3\frac{3}{4}$ points in the past two weeks, has always been a favorite of institutional investors because of its high yield (dividend, \$3/year). Because of the relatively few outstanding Allied shares—many of which are already held by large mutual funds—a wave of institutional buying sharply affects the stock's price.

•
To some, chemical stock prices appear high in relation to '58 earnings prospects.

"It's my view," says Chemical Fund President Francis Williams, "that prices to date have outstripped the improvement in sales and earnings." But Williams and others point out that a sharp improvement in '59 earnings would bring these ratios into line.

Among latest signs that a fast-paced upturn may be on the way:

- Abbott Laboratories President George Cain estimates Abbott's sales will hit \$120 million this year, compared with \$111 million in '57. Earnings, says the Abbott executive, should be about \$3.50/share; they were \$3.30/share last year.

- Reichhold Chemicals reports September sales were highest of any month in the company's history, up 23.2%, to \$7.1 million. Nine months' sales totaled \$54.3 million, an 8.1% boost.

- Alcoa and Reynolds last week started up aluminum potlines idled earlier this year—Alcoa at Point Comfort, Tex.; Reynolds at Troutdale, Ore. In addition, Alcoa is bringing a new potline at Massena, N. Y., into full production.

•
Does the European "common market" threaten U.S. export sales?
Yes, say CPI spokesmen, including General Aniline President John Hill-dring (p. 26).

Business

Newsletter

(Continued)

But some European leaders deny this. Last week, for instance, Belgium's Foreign Minister Pierre Wigny rejected predictions that countries outside the trade areas would be excluded from European markets. Euro-mart will strengthen Europe's economy, says Wigny, and "the richer we will be, the more capable we will be of buying . . ."

U.S. companies, meanwhile, continue to enter the trading areas. Latest is Chas. Pfizer, which gains a foothold in the proposed free-trade area with its purchase of Kemball, Bishop & Co., English fine-chemical maker. Purchase price for most of the private firm's outstanding shares: about \$8.1 million. And Merck's Dutch subsidiary will broaden its doorway to the common market by expanding production facilities for its diuretic Diuril, which it ships all over Europe. Expansion cost: about \$880,000.

Another U.K.-U.S. link has been forged by Aerojet-General Corp. (Azusa, Calif.) and Britain's Bristol Aeroplane Co. They have formed Bristol-Aerojet Ltd. to sell Aerojet's solid rocket fuels in the U.K. and in the Commonwealth. Eventually, the new company's marketing area will probably be widened to include friendly European nations. A plant will be built in England.

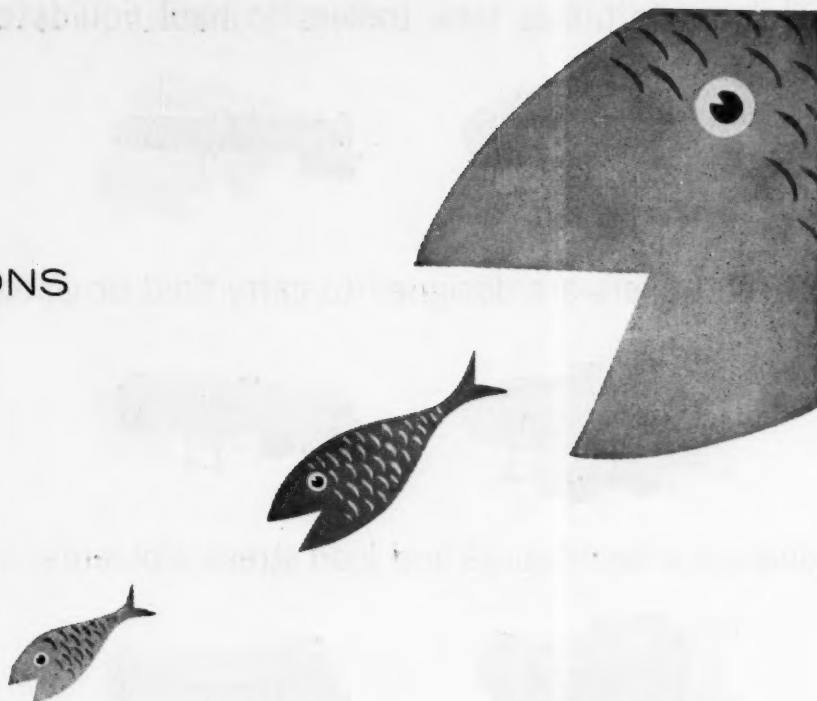
Stauffer's request for tariff increases and import quotas against foreign supplies of tartaric acid and cream of tartar came up for public hearing before Tariff Commission this week. Stauffer, sole U.S. producer of the chemicals, says that yearly since '52 it has lost money selling them, due to competition from imports priced below Stauffer's production costs. Last year, Stauffer sold 3.9 million lbs. of the chemicals for a total of \$1.2 million, at prices higher than those of the imported material. Imports totaled 2.6 million lbs., valued at \$701,000.

Two more mergers are on the way.

- American Agricultural Chemical Co. (New York) says it will buy "substantially all the physical assets" of Knoxville Fertilizer Co., which operates plants in Kentucky and Tennessee. They will be operated as AAC's new Knoxville fertilizer division.

- Mead Corp. (Dayton, O.) is broadening its interest in the plastics industry with the upcoming acquisition of Wrenn Paper Co. (Middletown, O.). Wrenn produces specialty paper fibers for laminated plastics. If Wrenn stockholders approve on Oct. 20, Mead would issue 75,375 shares of stock in exchange for Wrenn stock on a 3-for-4 basis. Wrenn would then become a wholly owned subsidiary of Mead. In August, Mead became the third major paper producer to enter the polyethylene-coated wrapper field, when it purchased Lamex, Inc. (Norcross, Ga.). The latter supplies polyethylene products to the textile, agricultural, food, and paper industries (*CW*, Aug. 2, p. 25).

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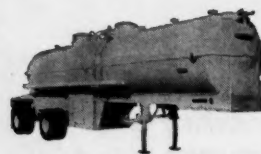
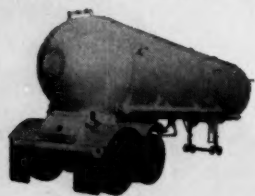
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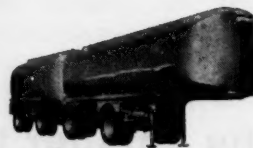
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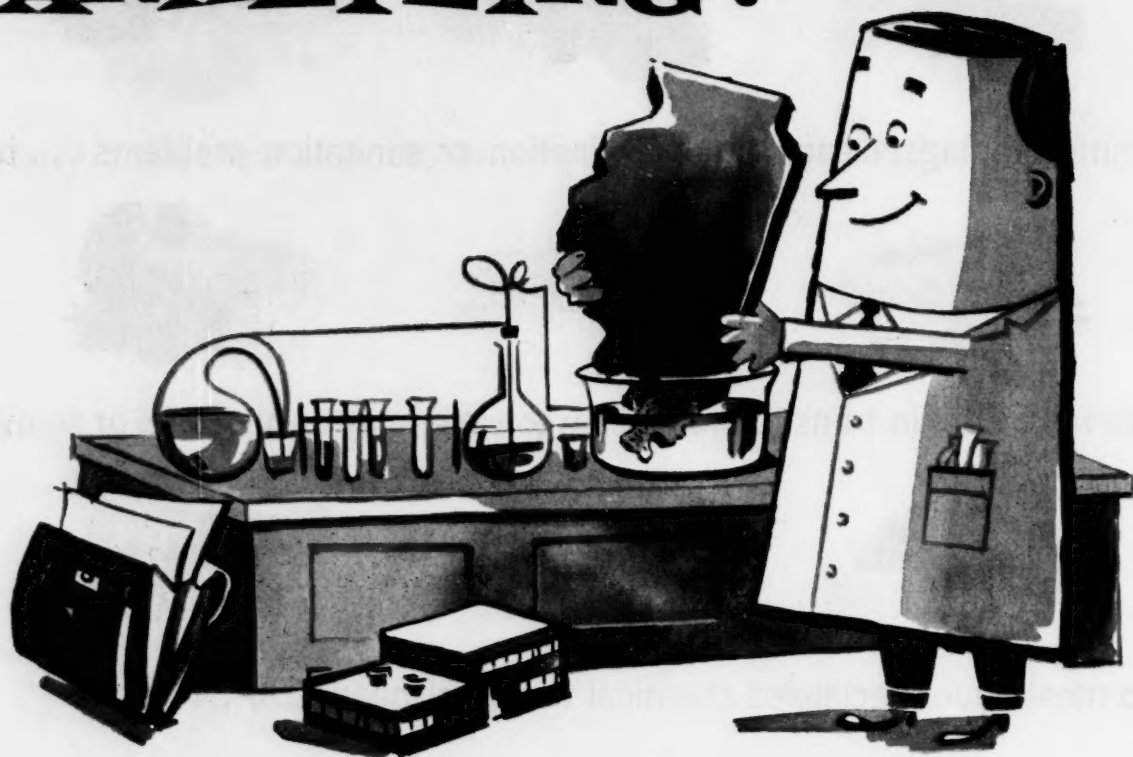
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October 18, 1958 • Chemical Week

AREA ANALYZING?



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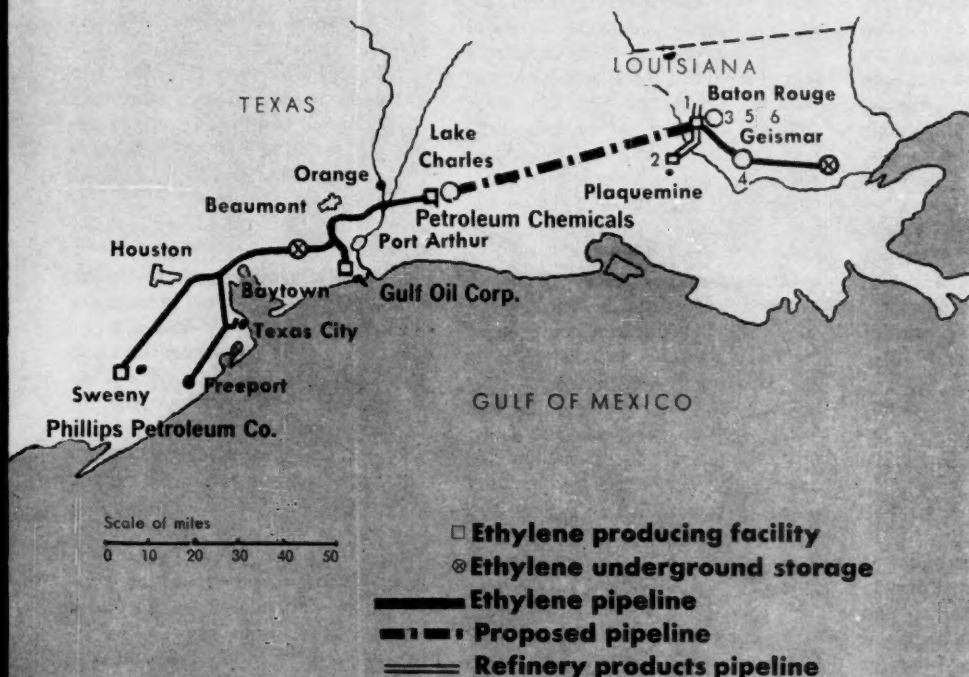
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CENTRAL ILLINOIS PUBLIC SERVICE COMPANY

GENERAL OFFICES: ILLINOIS BUILDING, SPRINGFIELD, ILLINOIS

Gulf Coast Ethylene Supply Systems



- 1 **ESSO REFINERY** — where high-purity ethylene unit is out of operation following recent fire.
- 2 **DOW'S NEW PLANT** — with nearly completed ethylene unit that will run on Esso refinery gases.
- 3 **GRACE POLYETHYLENE PLANT** — now operating on high-purity ethylene from underground storage.
- 4 **WYANDOTTE ETHYLENE DERIVATIVES PLANT** — operating on high-purity ethylene from underground storage.
- 5 **ETHYL'S TEL PLANT** — operating on lower-purity ethylene from older unit at Esso's refinery.
- 6 **FOSTER GRANT'S STYRENE PLANT** — operating on lower-purity ethylene from Esso refinery.

After the Fire, Ethylene Users Take Stock

In Louisiana this week, four big ethylene processors — Grace, Ethyl Corp., Wyandotte and Foster Grant — are assuring their customers there'll be no shortage of ethylene derivatives. Their confidence prevails despite the 36-hour fire at Baton Rouge that put their ethylene source — Esso's \$12-million high-purity ethylene recovery unit — virtually out of commission (CW Business Newsletter, Oct. 11).

Esso — whose offers to provide large quantities of ethylene at low prices had been influential in chemical companies' decisions to build plants in the Baton Rouge area — is guaranteeing that these processors

will get the ethylene they need.

Various Alternatives: How Esso will make good on this promise is not explicit. An Esso spokesman told CW, "We have several aces up our sleeve" — but he would not elaborate.

One intriguing — but unlikely — possibility: that Esso hastily construct a 150-mile pipeline to tie in with the ethylene distribution system of Petroleum Chemicals Inc. at Lake Charles (map, above). It might be possible to finish this by the time Esso's two-month underground storage supply is used up. And such a tie-in might later prove useful to both Esso and PCI — as well as to their customers.

But Esso has indicated that this scheme is definitely out, at least for the present. Esso also tosses cold water on the idea of hauling in ethylene by truck or rail, either as a compressed gas or in liquefied form. In several European countries, ethylene is transported as a low-temperature liquid, but it appears that this would be uneconomic in the U.S. — and quite unnecessary in this case.

Existing Pipelines: There are already a number of pipelines connecting Baton Rouge with other petroleum refining centers on the Gulf Coast. One or several of these "refined products" pipelines might be

chartered to carry ethylene for one or two days each week into Esso's underground storage dome at Sorrento.

Perhaps the likeliest pipeline for helping Esso live up to the "force majeure" clause in its ethylene supply contracts is the one that will connect Esso's huge Baton Rouge refinery with Dow Chemical's diversified plant now approaching completion at Plaquemine. The new plant includes an ethylene unit. But that unit has been designed to supply Dow's internal needs; its onstream date is indefinite and Dow says, "At this time, the Louisiana Division has no plans for production for other consumers."

But an Esso-Dow link exists here. Esso will supply refinery gases for Dow's ethylene production. And it is possible that the pipeline could carry refinery gases to Dow for part of each day, transmit ethylene to Esso at other times.

The Dow ethylene unit is nearly complete now, and the company apparently doesn't yet have any pressing use for its output.

Distillation Columns Unhurt: Still another possibility is that Esso might be able to get its high-purity ethylene recovery unit back onstream more quickly than first expected. Two fire-damaged gas turbines have been sent back to General Electric, slated for repair work that might take six to nine months. But only the turbine-compressor area was damaged; the process area, with its distillation columns, was a safe distance away. Some industry men think Esso might be able to install other turbines and compressors on a temporary basis within a few months.

Meanwhile, Esso is actively producing ethylene of purity sufficient to keep both Ethyl and Foster Grant in production. This ethylene is coming from a unit that had produced the gas until last May, when Esso put its new high-purity unit into operation, and which has since been used for making ethanol. Grace and Wyandotte are currently receiving higher-purity ethylene from the 300,000-bbl. salt dome at Sorrento, and this is expected to keep them going for up to two months.

No Details: Esso isn't saying—and maybe doesn't yet know—just what caused the fire. The new \$12-million ethylene unit—with turbines believed

to be scale-ups of smaller GE models successfully used elsewhere—had been in operation about five months. There had been some delay in the startup, and for a short time Grace was trucking ethylene from Texas to begin polyethylene production at Baton Rouge.

There have been reports of turbine trouble (e.g., blade cracking) since Esso's new unit went onstream last spring. But this might be unrelated to the Oct. 1 fire, which reportedly started from the speed reduction gear train on one turbine line. The blaze damaged the other turbine, caused the roof to collapse and kept employees out of the compressor room for about two days. A GE spokesman says the turbines were not responsible for the fire.

Consequences of the fire remain to be seen. Apparently, there will be no major disruption of ethylene processing and no serious financial harm to any of the companies involved. Over the long term, the experience may lead to improved turbine design and manufacture, greater use of storage and more and longer pipelines for Gulf Coast ethylene. For instance, Gulf Oil's Petrochemicals Dept.—whose Port Arthur plant accounts for an estimated 10% of U.S. ethylene capacity—admits it has thought about extending its Freeport-to-Orange pipeline service all the way to Baton Rouge.

Vitro, Koppers Teaming

Vitro Corp. and Koppers Co. last week completed plans for combined bids on government weapons system contracts.

Such company teams, of course, are not new (*CW Business Newsletter*, Aug. 9). But, in contrast with those formed to bid on a single project, the Koppers-Vitro pact is for an "indefinite period of time" and may involve a number of projects.

Reason for the joint effort: "It eliminates administrative inefficiencies that the U.S. Dept. of Defense is reported to have experienced in dealing with large numbers of contractors."

Both firms will contribute existing plants and laboratories. Among plants involved: Koppers' three manufacturing units in the Baltimore area, another in Philadelphia, and Vitro's research labs in Silver Spring, Md., and West Orange, N. J.

Union Seeks Strength

Delegates to last week's International Chemical Workers Union convention in Washington, D.C., gave President Walter Mitchell a stronger status within the union, took a stronger stand on multiplant bargaining, and voted to proceed toward merger with the larger and stronger Oil, Chemical & Atomic Workers Union.

Mitchell, who won his office two years ago by only 30 votes more than the required two-thirds, was unanimously re-elected to head the union for another term. And in four out of five contested elections for regional vice-presidencies, pro-Mitchell candidates won handily.

Mitchell's position on multiplant bargaining was spelled out in his opening address: "... all we want is a fair share; and if it takes company-wide negotiations to achieve it, and I am sure it does, then that is our goal."

Since a more prominent position will be accorded international union officers in company-wide bargaining, those in favor of strong local autonomy—traditional in the Chemical Workers—oppose Mitchell's stand. A nearly 10-to-1 affirmation of the president's view left no doubt as to future union activity in this area.

OCAW President Jack Knight sent a speech, read by OCAW Vice-President Elwood Swisher, largely centering on merger problems. He urged a cautious approach.

With Mitchell's support, an approximately 2-to-1 voice vote carried the resolution to form a joint ICWU-OCAW merger committee to meet between March 15 and May 15 next year. OCAW passed a similar resolution in its convention last month.

Other convention highlights:

- Delegates heard George Meany, president of AFL-CIO, recommend the merger, but he added that "no pressures of any kind from AFL-CIO" will be forthcoming.

- AFL-CIO's Committee on Political Education collected \$296 from delegates after Director James McDevitt exhorted more active local politicking.

- President Mitchell announced that the strike fund started last year had reached the \$200,000 minimum set by the union, meaning that strike benefits can now be paid.



Stauffer's MacMullen: Diversing.



Century's Hodgins: Negotiating.

Pair of New Partners

The fast-growing "togetherness" among CPI firms, stemming from the urge to merge know-how, was evidenced last week by formation of four new companies, including two joint ventures and one consolidated concern.

Making their bow this week are Stauffer Pharmaceuticals Inc., jointly owned by Stauffer Chemical Co. and E. Merck AG. (Darmstadt, Germany); Century Chemical Corp., set up by two former Reichhold Chemicals ex-

ecutives; Corn Products Co., formed by merger of Corn Products Refining Co. and Best Foods Inc.; and Sun-Olin Chemical Co., a new subsidiary of Olin Mathieson and Sun Oil Co.

The Stauffer-Merck venture represents Stauffer's first entry into the booming pharmaceutical field. Initially, the company will manufacture and sell the German firm's drug and fine-chemical products in the U.S. and in Canada. Manufacturing probably will be carried out at existing Stauffer

plants, but later a separate plant may be built. Production is slated to get under way by early '59. Stauffer's former assistant market research manager, F. W. MacMullen, has been named as president of the new firm.

The German firm is completely independent of the U.S. drug company, Merck & Co., Inc. And its products will be sold under the Stauffer name in the U.S. to avoid legal tangles.

Intermediates for Century: Another newly formed company, Century Chemical Corp., will produce organic intermediates in the U.S. and overseas.

The exact types of intermediates Century will make weren't disclosed. Neither was investment revealed. The firm's officers are Thomas Hodgins, president, a former vice-president of research for Reichhold, and John Levenson, Jr., vice-president and treasurer, a former RCI researcher.

Both officers declined to give further details on the new company's line, explaining that negotiations to acquire new plants—though well advanced—haven't yet been concluded. It's believed Century will buy an existing firm with plants in the U.S. and Europe, will be ready to start production under the Century name by the first of the year.

Forming Corn Products Co. adds Best Foods' big line of consumer items to CP's consumer-industrial line.

No De-emphasis on Chemicals: But Corn Products' Emerson Schroeder, vice-president of manufacturing, told *CW*, "the merger won't mean any de-emphasis on industrial chemicals." As of now, said the CP executive, the company would consider new expansion of both industrial and consumer lines on an equal basis; that is, "we don't feel either has less growth potential than the other."

Chief executive officer of the new firm, William Brady, revealed that the merger was consummated last week when stockholders of both companies approved merger terms calling for conversion of each outstanding share of Corn Products common and each 1.6 shares of Best Foods common for one share in the new firm.

Another of the new firms, SunOlin Chemical will make urea at a new plant in Marcus Hook, Pa. The new firm was officially formed last week when Sun Oil executive James Harper was named as president.



SunOlin's Harper: Combining.



Corn Products' Brady: Merging.



General Aniline's Hilldring: 'Euromart is a threat of vast dimensions.'

Sounding Euromart Alarm

Back in the U.S., after a first-hand look at the European "common market," Gen. John H. Hilldring, president of General Aniline & Film Corp., addressed the Synthetic Organic Chemical Manufacturers' Assn. last week. His theme: the rising common market poses a "threat of vast dimensions to American industry"—a threat U.S. companies can meet only by getting inside Euromart "while there is still time."

From the foreign viewpoint, Hilldring predicted, common market cooperation will impart "tremendous economic strength" to western Europe. But for their own welfare, U.S. businessmen must view the development as it affects U.S. exports. Over the past six or seven years, he pointed out, the importance of U.S. exports in world trade has been "drastically reduced," and foreign trade is "now more or less regulated from abroad."

Necessity for Exporting: Behind this trend are two factors that provide a framework for evaluating future effects of the common market: the need for Europe to export a large part of its production, and the "monopolistic free-enterprise" nature of western European business. The first factor will provide the driving force, the second the means, by which European businessmen will give U.S. exporters a harder run for their money.

Aside from the primary goal of

bolstering western Europe's economy and standard of living, "a second, unexpressed purpose" lies behind the common market, Hilldring asserted. This is the conquest of world trade. The cartelization of European industry has eliminated the "price book" system by which U.S. companies trade. European companies price chemicals at different levels in different markets, selling at whatever price they can get.

Chemical Tariffs Rising: Another, immediate threat facing U.S. businessmen is the common tariff wall, which will start going up in June. The projected dyestuffs tariff is an example. In 12 years, it will have been gradually stepped up to 19%. That will lower the French and Italian levels. But it will raise the present 12% German tariff, and put a tariff wall around the Benelux nations, where none now exists for dyestuffs.

In an interview with *CW*, General Hilldring expanded on his 20-minute speech. Instead of breaking up European monopolistic organization, he said, Euromart may strengthen it.

One of the early jobs of the common market will be to "pick centers" where certain goods will be produced. The big companies will work in harmony, under their present "non-competitive free-enterprise" philosophy. "There won't be a battle between goliaths in the common market," he predicted.

Lower Freight Rates?

Chemical companies and other big shippers will soon find themselves in the middle of a freight rate war that may well be the biggest battle yet between truckers and railroads. And it could lead directly to lower charges for hauling the output of CPI plants.

Rate figures already being discussed reveal that rail executives are convinced they now have the legal means—and the shipping techniques—with which to compete on a price basis with trucks, and take business from them.

Specific cause for the forthcoming rate battle is the recent success of the railroads in shifting the basis of freight rate charges—away from the traditional classification and commodity basis, where the rate is predicated to a large degree on the commodity value, to charges based on the volume of weight shipped, regardless of the content.

Truckers claim that the volume-basis trend for rail freight charges threatens their entire existence. And, one of the most outspoken representatives, Eastern Central Motor Carriers Assn., Inc., has filed a multi-charge blast with Interstate Commerce Commission at some 22 of the nation's railroads and an equal number of leading freight forwarders across the country. The association wants ICC to conduct a master investigation of volume rates and knock most of them out.

The rate-making trend started after World War II as railroads began hauling loaded truck trailers on rail cars for a flat fee regardless of the commodities inside the trailer.

This summer, in another step in this direction, ICC allowed the rails to offer rates based on volume shipments of 70,000 lbs.—about equal to two boxcars.

If the railroads can convince ICC that the volume rates will return the rails a profit, it will be hard for ICC to rule them out. Truckers, however, charge that this kind of rate competition will have ruinous effects on the nation's transportation system as a whole. If the trucks are put out of business, they say, the nation's shippers will be left at the mercy of the rails to charge what they please.

The truckers' demands for ICC action seem sure to bring a re-evaluation of freight rate structure.

COMPANIES

Carborundum Co. (Niagara Falls, N.Y.) will move its Curtis Machine Division operations from Jamestown, N.Y., to Niagara Falls. Company President Clinton Robinson says the move is being made because there was no room for expansion at Jamestown and because activities of the Curtis division and the company's three abrasives divisions at Niagara Falls are to be more closely integrated. The Curtis division's supervisory and engineering employees will transfer to Niagara Falls.

Haloid Xerox Inc. (Rochester, N.Y.)—producer of photographic materials and chemicals—is raising money for research facilities and working capital. The company last week sold to institutional investors 4½% promissory notes, totaling \$2 million; and its stockholders have approved a proposal to issue 50,000 shares of \$100-par cumulative preferred stock. Of the new preferred stock, 20,000 shares will be sold to institutional investors; the remainder will be treasury stock.

Goodyear Tire & Rubber Co. (Akron, Ohio) is establishing a Vitel Products Development Dept. to handle application and sales services for Vitel resins and Videne laminating films. Manager of the new department will be C. W. Taylor, former process engineer in Goodyear's research division, who is credited with an important role in development of the new materials.

Glidden Co. (Cleveland) plans a public offering of \$30 million in 25-year sinking fund debentures to repay bank loans and to provide additional operating capital. Glidden's net income for the fiscal year ending Aug. 31 was down by about 15%, largely because of a \$1.2-million charge-off against second-half pretax income to cover abandonment of the titanium pigment plant that had been started in Baltimore.

EXPANSION

Hydrogen: Chemetron Corp. (Chicago) will supply a 3-million-cu.ft./day hydrogen plant for Irving Refining's 40,000-bbbl./day refinery now being built at Saint John, N.B. Prime contractor is Canadian Bechtel Ltd.

Carbon Black: Continental Carbon Co., Witco Chemical subsidiary, will boost capacity of its Ponca City, Okla., plant 50%, to 75 million lbs./year. Work will start in the next two months, is slated for completion by next fall.

Asbestos: A four-company team proposes to take over financing and operations of a \$17.9-million project to develop asbestos deposits discovered in Newfoundland by Advocate Mines. The participants: Canadian Johns-Manville Co., Patino of Canada, Amet Corp.

(a Panama corporation backed, like Patino, by the Bolivian Patino family), and Financiere Belge de l'Asbeste-Ciment S.A., a Belgian firm.

Paper: Continental Paper Products Ltd. will build a \$2.5-million paper products plant at Pointe-aux-Trembles (near Montreal). Continental, which specializes in producing bags and envelopes, will use kraft paper made at Canadian International Paper Co.'s La Tuque, Que., plant.

Nuclear Power: Two nuclear power plants (in addition to the previously announced Big Delta plant) will be built in Alaska, according to Washington Governor Albert Rosellini. Plant sites are still secret. The units will, at least at the outset, power military installations that now must be supplied with fuel oil flown in at 30¢/gal. cost. Atomic power may eventually be available for industry.

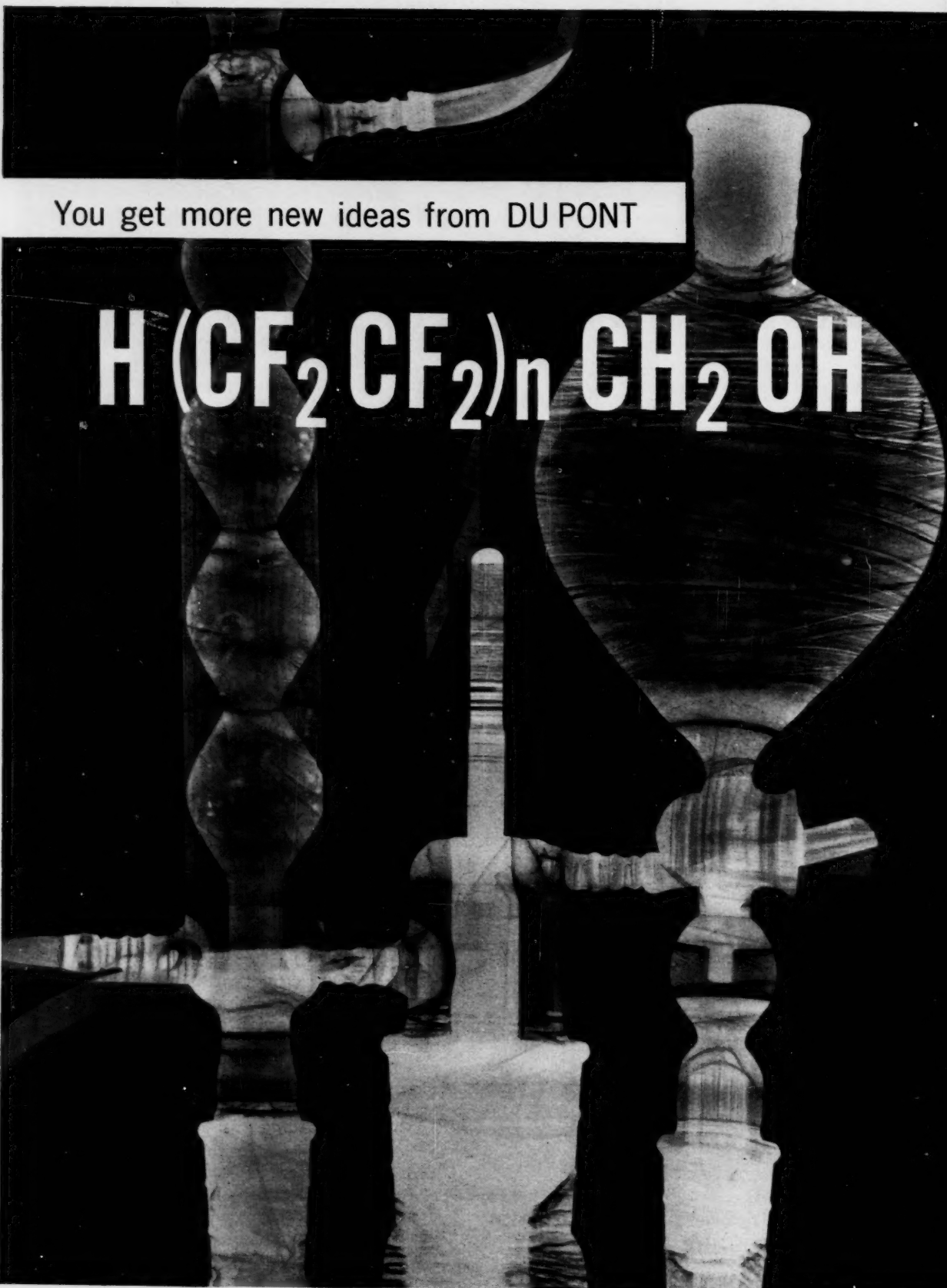
FOREIGN

Chemicals/Germany: For the first time on record, West Germany's chemical imports are rising faster than exports, according to latest figures from the Assn. of the German Chemical Industry. During the first six months of '58, chemical exports rose only 2%, to \$53 million, while imports swelled by 8.5%, to \$197 million. Further cause for German concern: the modest export gains were restricted to a few groups. Most lines stagnated or slumped. Coal-tar dye exports, for example, slid 16%; and exports of staple fibers plunged 25%. But nitrogen fertilizer exports shot up 40%, to \$46 million, while exports of pharmaceuticals rose 18% and photochemical products advanced 16%.

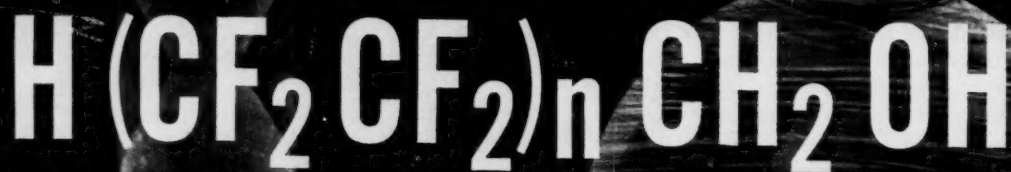
Plastics followed this new trend: imports up 37%, to \$19.2 million; exports up 10%, to \$60.7 million. Total domestic plastics production registered a 15% gain over the first half of '57, reached 310,000 tons.

Paint Products/Belgium: Prompted by "strong faith in the future of the European economy, together with wider trade opportunities under the 'common market'," Du Pont is forming a Belgian subsidiary to build the U.S. company's first plant outside the American continents (see also p. 37). Products: lacquers, enamels, paints, varnishes and thinners. Construction—on a 17-acre site at Malines—will start around Jan. 1, is slated for completion in fall, '59.

Newsprint/Mexico: Mexico's first newsprint plant, a \$16.5-million project, has started up in the jungle state of Oaxaca. Initial capacity is 25,000 short tons/year, using thermal electric power. When the giant Papaloapan dam starts up next year, capacity will be 45,000 tons. Later, installation of \$8 million in additional equipment will boost capacity to 90,000 short tons.



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C9 Fluoroalcohol— $\text{H}(\text{CF}_2)_8\text{CH}_2\text{OH}$ (1H, 1H, 9H-Hexadecafluoro-1-Nonanol)

C11 Fluoroalcohol— $\text{H}(\text{CF}_2)_{10}\text{CH}_2\text{OH}$ (1H, 1H, 11H-Eicosafluoro-1-Undecanol)

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C7 Fluoroalcohol, C9 Fluoroalcohol and C11 Fluoroalcohol are three unique compounds representing the higher members of a series of trihydrofluoroalcohols containing an odd number of carbon atoms prepared by the free radical telomerization of tetrafluoroethylene with methanol. The new fluoroalcohols should be highly valuable as intermediates for the preparation of derivatives having improved thermal and chemical stability. This may include the production of lubricants, instrument oils, corrosion resistant coatings, plastics and surface active agents.

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CHEMICAL MATERIALS FOR INDUSTRY

HERCULES

Washington Newsletter

CHEMICAL WEEK
October 18, 1958

Another big round of tariff-cutting negotiations is due in about 18 months. That's the main business of the current meeting of the "General Agreement on Tariffs and Trade" (GATT) in Geneva. The 1960 negotiations are sure to result in a thorough overhauling of the international tariff structure and to make changes needed as a result of the formation of the European "common market" (see p. 26).

•
A better competitive break for U.S. products in world markets is the goal of this country's delegation to the 45-nation meeting that opened in Lisbon Oct. 6 to rewrite the international patents and trademarks convention. The U.S. delegation—headed by Patent Commissioner Watson—will be working for massive revisions to encourage adoption of more effective antitrust policies abroad.

U.S. drug firms hope for some relief from the long-standing widespread practice overseas barring, or severely limiting, patent protection for U.S. products. The problem: many countries refuse to grant drug patents to U.S. firms, while providing such protection to their own nationals. Others flatly bar patents on drugs and foods (although their nationals can patent such products under U.S. laws). These countries limit protection to a particular process for manufacturing a food or drug product. This means the patent fails to protect a U.S. firm against a competitor making the same product by a different manufacturing process.

•
A New York Customs Court ruling would severely limit Presidential action on "escape clause" tariff decisions—cases in which domestic industries ask for tariff protection against damaging levels of imports. The new decision says the President may only accept or reject changes in duties recommended to him by the Tariff Commission. He has no legal authority, says the court, to modify such recommendations.

The ruling undoubtedly will be appealed. Government lawyers are dumbfounded by the decision. Protectionists—who believe that the Tariff Commission is generally more receptive to their pleas than the President—hail it as a significant victory. Both Presidents Truman and Eisenhower often responded to pressure for increased tariffs by granting something less than was recommended by the commission.

•
Antibiotics makers won a brief reprieve in facing government antitrust charges. Federal Trade Commission has put off to Oct. 30 a start on public hearings—originally slated to take place this week (Oct. 17)—on the price conspiracy and patent manipulation charges it filed against five major broad-spectrum antibiotics producers last July 28.

The Oct. 30 hearing will be the first of many to be held on the case before veteran FTC Trial Examiner Frank Hier at New York's Foley

Washington Newsletter

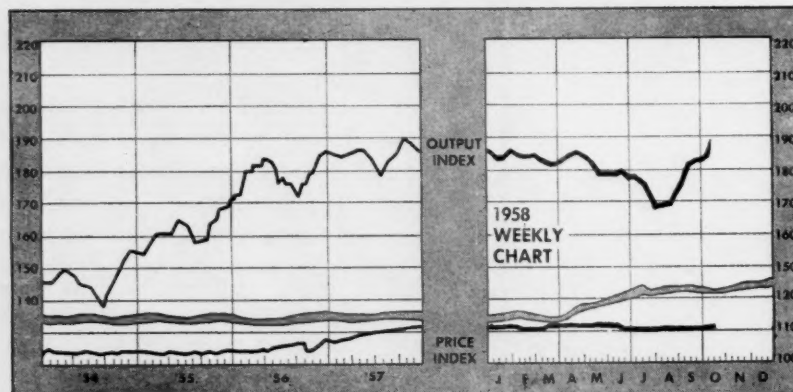
(Continued)

Square federal courthouse. They're designed to build up a record of testimony from both sides. Next step—at least months away—is Hier's advisory report to the commission on whether to dismiss the complaint or seek remedial action against the companies. So far, only two of the five firms—Upjohn and Olin Mathieson (Squibb)—have filed answers to the complaint. They flatly denied the government's charges.

More financial aid to cities to build waste treatment plants seems assured. Last week HEW Secretary Flemming revealed that the Administration is sweetening its offer of federal telephone tax rebates in a bid to get the states to take over the three-year-old federal grants program.

The move—giving the states \$85 million/year to distribute to cities, compared with the present \$50 million in direct federal grants—is designed to counter a Democratic bill upping the annual aid figure to \$100 million, with the program staying under federal operation.

But, there's a lot of opposition to defederalizing the program from conservation, wildlife and mayors' groups—and no assurances that state governors will go along with the changeover when the White House puts it before the next governors' conference in December. Moreover, the driving force behind the plan to get the federal government out of the waste treatments grants has been Sherman Adams—and he won't be around to press the fight when Congress takes up the issue next year.



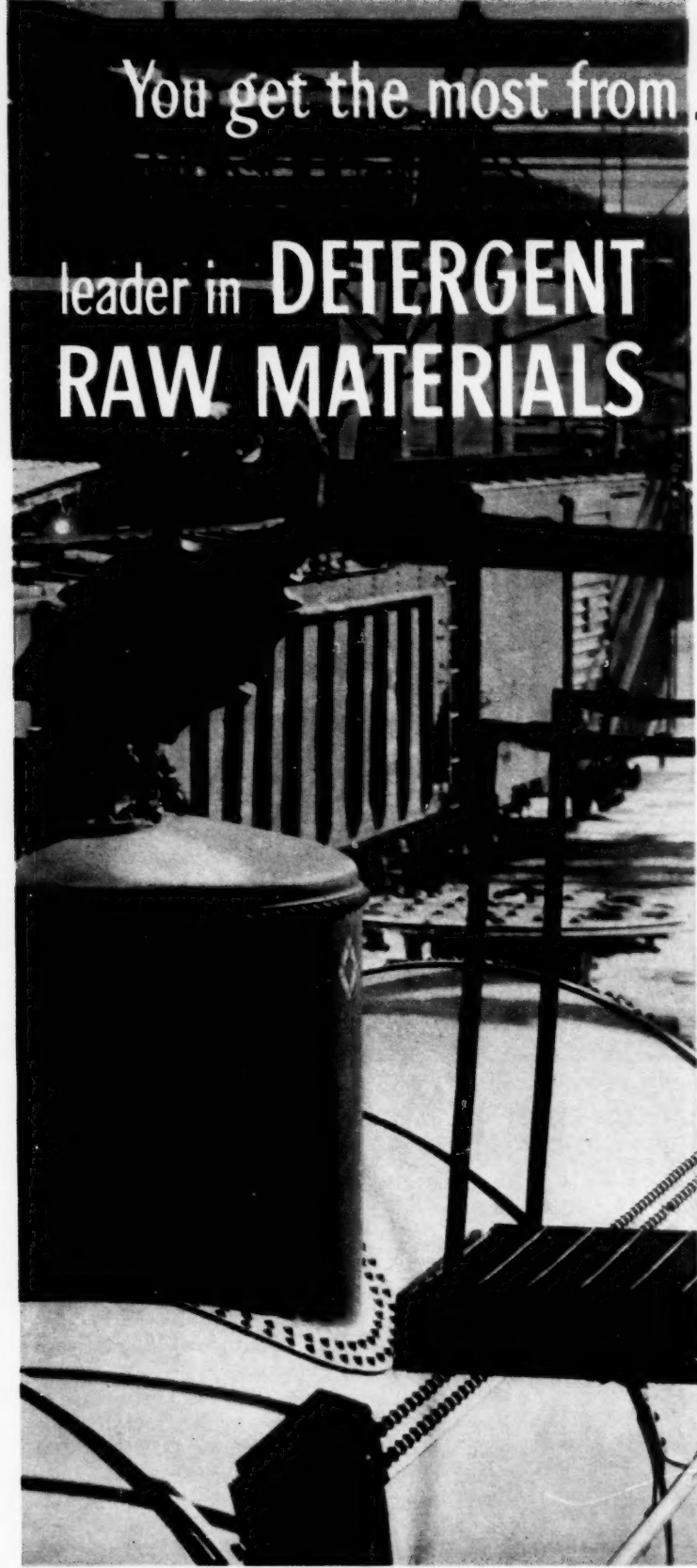
Business Indicators

WEEKLY

	Latest Week	Preceding Week	Year Ago
Chemical Week output index (1947-49 = 100)	189.8	189.5	189.5
Chemical Week wholesale price index (1947 = 100)	110.9	110.5	111.0
Stock price index of 11 chemical companies (Standard & Poor's Corp.)	46.84	45.56	40.18

MONTHLY

Foreign Trade (million dollars)	Latest Month	Exports		Year Ago	Imports		Year Ago
		Preceding Month	Month		Latest Month	Preceding Month	
Chemicals, total	109.2	113.3	115.1	19.6	20.3	20.8	20.8
Coal-tar products	9.7	6.8	9.1	6.0	4.5	5.7	5.7
Industrial chemicals	17.5	16.7	19.4	6.0	7.2	6.9	6.9



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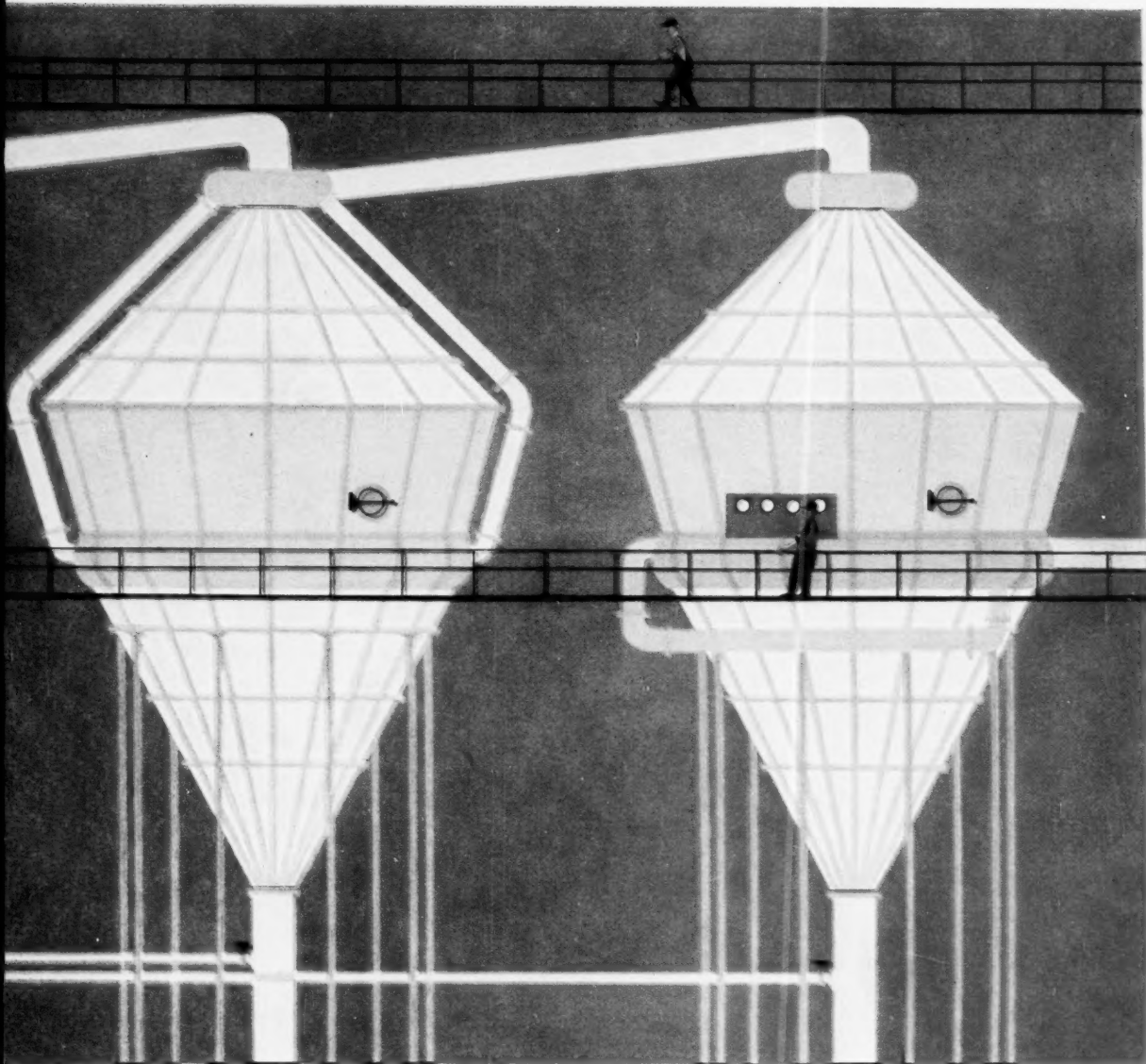
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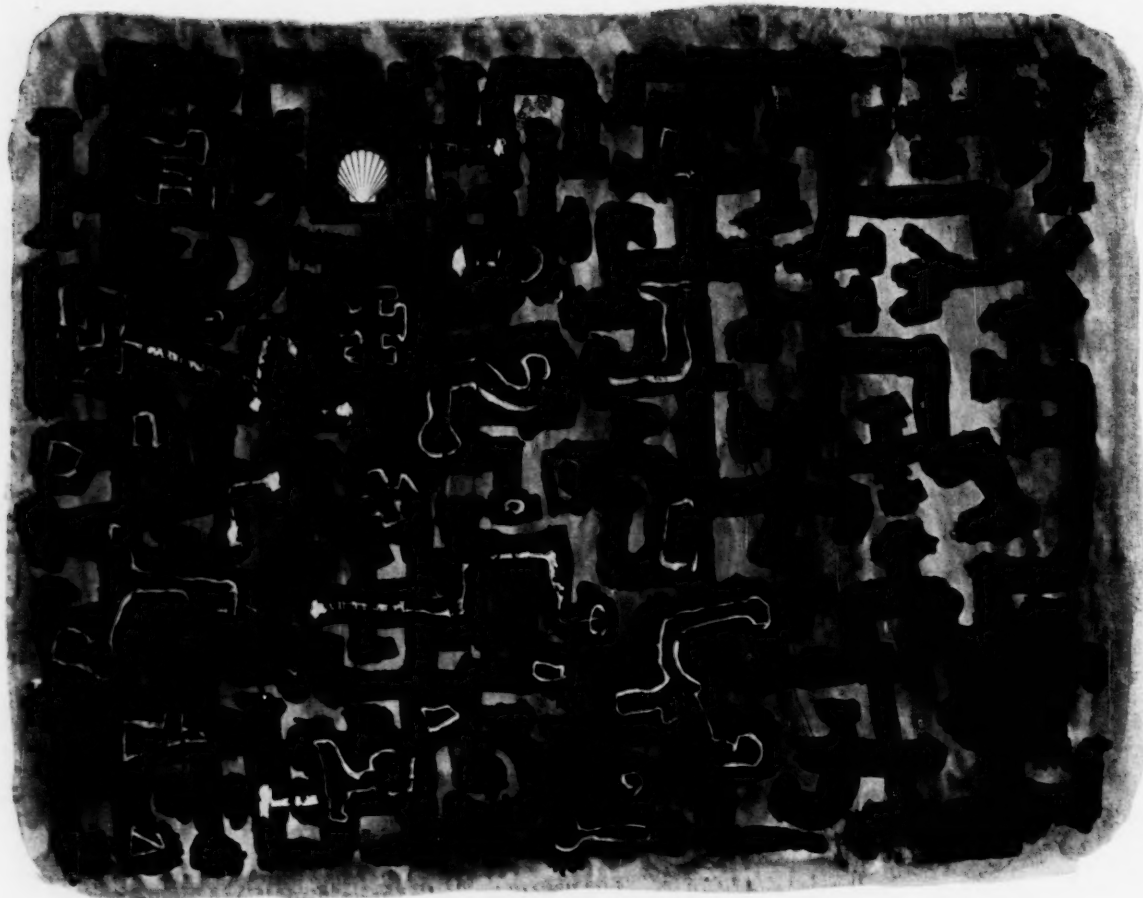
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ADMINISTRATION

Teamed for Profit: Irish Labor, U. S. Capital

Construction Chief Guy Quick (right) of Chemstrand Corp.'s foreign subsidiary, Chemstrand Ltd., is a busy man this week—making final preparations for this month's opening of the company's new, \$9.8-million Acrilan acrylic fiber plant at Coleraine, Northern Ireland.

The venture focuses new attention on the U.K. division as an industrial area. It has drawn 130 foreign firms—seven U.S.—since World War II.

The seven companies from the U. S. include another chemical producer—aside from Chemstrand, a Du Pont subsidiary, Du Pont Ltd., is building a \$16-million neoprene synthetic rubber plant, due onstream early in '60. By '60, when the last of their still-building plants have come in, the seven U. S. outfits will have invested \$38 million in Northern Ireland subsidiaries. They will be employing 2,700 workers, have a total plant area of nearly 2.5 million sq. ft.

Area Advantages: Managing directors of Chemstrand Ltd. and Du Pont Ltd. (U.K.), say that Northern Ireland offers much to U. S. chemical process companies looking for manufacturing sites within the British Commonwealth.

To begin with, production within the U.K. by subsidiaries of U. S. concerns provides the opportunity to tap sterling area markets, as well as those on the continent, which might otherwise be closed to U. S. goods because of controls on dollar imports. Continental European markets will become even more accessible, when the proposed free-trade area becomes a reality.

Arvon Davies, Chemstrand Ltd.'s managing director, told *CW*, "We wanted a plant in the U.K. and, after looking at 61 sites throughout Britain, we decided on the one at Coleraine. Our decision was based on a detailed assessment of costs per pound of fiber. When figures for the alternate sites were close together, factors such as labor availability, services, housing, schools and recreational facilities came into play."

Government Assistance: Like Chemstrand, Du Pont, whose abuilding plant near Londonderry will be the company's first outside the Americas,



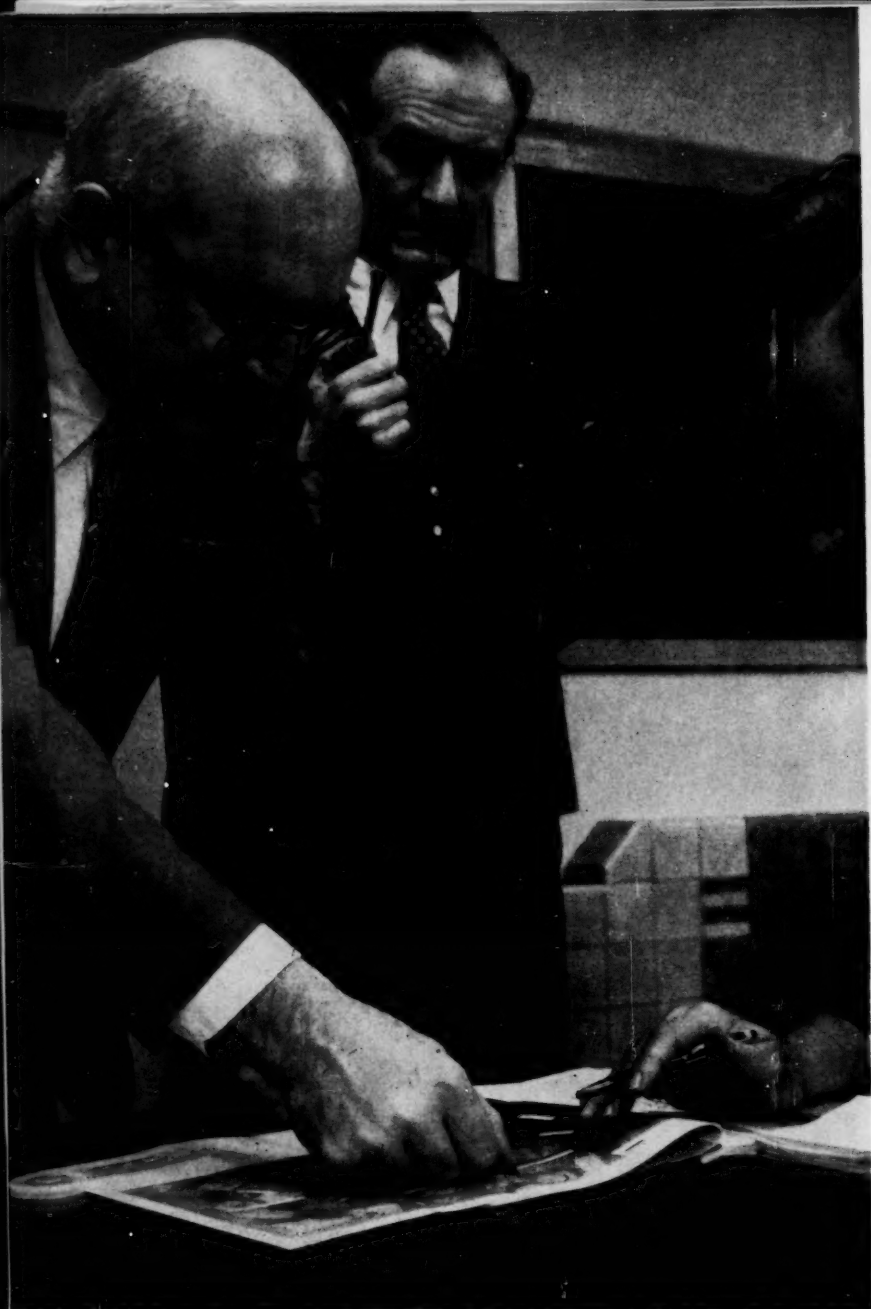
Chemstrand's Quick found Irish eager to cooperate with newcomers.

based its choice primarily on physical aspects of the land—flat, spacious, accessible. But both took advantage of certain financial inducements by Northern Ireland's government.

With an unemployment rate of nearly 10% (a condition that has existed since long before the '29 depression), Northern Ireland is anxious to attract industry. To do this, the government offers to pay 25% or more

of the cost of constructing a new plant and outfitting it with equipment. (The percentage scales down to 10% when building costs exceed \$140,000 and equipment costs are higher than \$280,000.)

In some instances, the government is constructing plants according to a company's specifications. The plant may then be bought by the company on a deferred-payment basis. And



DuPont's Lang, Chubb brief Development Council member (center).

other companies are renting existing government-owned sites. Rent, which is based on the '39 rental level, is about 10¢/sq.ft.

In addition to assistance for the construction of new plants, Northern Ireland helps firms undertaking plant expansion or modernization. Foreign owners are reimbursed for 25% of such expenditures.

Tax Relief: Relief from property taxes can be negotiated. Most of the foreign subsidiaries have been exempted from 75% of their local taxes. The remaining 25% may be exempted

at the discretion of local authorities. One firm has paid no local taxes during the past 10 years, now pays only 25% of the taxes theoretically due local authorities.

Some U.S. firms are also taking advantage of the government's offer to help train a labor force. The employees at one firm received on-the-job training for 13 weeks, during which 75% of their wages were paid by the government. And for another firm, which needed several welders during construction of its plant, the government set up a welding training program.

ADMINISTRATION

In addition to a large labor surplus and good port facilities, there are adequate power and water supplies. Although industrial fuel is more expensive in Northern Ireland than in England, Northern Ireland makes up the difference. Last year, the government rebated about 15% of the cost of coal and electricity consumed by industrial subsidiaries of U.S. companies. Present coal rebate is \$2.45/ton.

Trouble Is Transportation: There are disadvantages to locating a branch plant in Northern Ireland. David Conklin, Du Pont Ltd.'s general manager, and Davies agree on the primary inconvenience: transportation. Raw materials must be shipped in; finished products, shipped out. There is no native market.

Both executives agree that other disadvantages exist, such as low availability of technicians. "Any site in Europe has its disadvantages," Davies said, "and our problems are minor in context."

Problem in Understanding: Clifford Lang, director of construction at Du Pont's plant, said the biggest problem for Americans going to Northern Ireland is communications—"a meeting of the minds."

The word "foreman," for example, indicates a higher-level position there than in the U.S. And, Lang's assistant, John Chubb, is "deputy director" because it indicates a higher rank than that of "assistant."

Establishment of the Chemstrand plant was heartily welcomed in Coleraine. Unemployment in the town of less than 11,000 population was at 1,000. The local biscuit factory had closed and a milk products factory had laid off 70 workers.

Chemstrand's plant is designed to produce 10 million lbs./year of fiber. It will consist of three manufacturing buildings, two chemical manufacturing areas, a main office building, will employ 400, most of them from Coleraine.

Tankers will supply the plant's liquid acrylonitrile from Europe. The plant uses the small port at Coleraine, less than a mile away.

Du Pont's Duplicate: Du Pont's plant will be the first neoprene synthetic rubber plant in the British Commonwealth. It is to be an almost exact duplicate of the company's plant at Montague, Mich., will employ 300.

"If we were building the plant in



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ADMINISTRATION

the States," said Lang, "it would take 15 months. We're figuring two and a half years here because of slower delivery of equipment."

Many of the instruments and other pieces of process equipment for the Du Pont plant are being purchased in the U.K. and shipped to the U.S. for testing before installation. Some equipment is being obtained on the continent, and there's been no problem in getting import licenses for it, according to Lang. Most of the construction equipment in use is British.

"Biggest contribution we 17 Americans on the construction team are making," Lang said, "is in planning and scheduling of the job, and experience in this type of job."

As the construction men move on, U.S. consultant technicians will arrive to get the plant in operation.

Further Cooperation: A further indication of the government's willingness to cooperate with new industry is seen in the construction of a Northern Ireland Electricity Board power station adjacent to the Du Pont plant. Originally, the station was to have been constructed in Londonderry, but location was shifted and it was enlarged to accommodate the new chemical complex.

There's ample indication that the industrial trend in Northern Ireland will continue for awhile at least. Recently, Imperial Chemical Industries said it plans to build a plant there to produce Terylene polyester fiber. ICI production is expected to start in '63-'64 in a plant that is expected eventually to employ 2,000 workers.

Lang sums up the feeling foreigners seem to have concerning Northern Ireland's attitude toward new industry: "I've never been in a place yet where the people have been more helpful than they are here. That includes not only the departments of government but also the people we live with."

Business Climate Bad?

Taking a line being echoed in political debates waging in New York state, Carborundum Co.'s President Clinton Robinson has bluntly declared that the business climate for industry in New York state is "not good."

Robinson's charge parallels that of Nelson Rockefeller, Republican campaigner against incumbent Democrat

Averell Harriman for the governorship of the state. Rockefeller charges that Harriman has failed to prevent the exodus of business and industry from the state.

Robinson told Associated Industries of New York State, at its annual meeting at Lake Placid, that businessmen should stop generalizing about bad business climate and "get down to cases and do something" about it.

He cited a recent experience of Carborundum, saying the company had to deal with an "untenable" labor situation by itself so that it could build a \$7-million plant in Niagara Falls instead of in Ohio.

Robinson said the attitude toward business and industry is casual, compared with the situation in other states. When Carborundum was attempting to work out details so that it could build its plant, he said, it received "no help of any nature from any governmental official nor from any private business organization in the great state." In some instances, he pointed out, Carborundum has had difficulty recruiting scientists and engineers because of the state's "relatively very high income tax." Its initial advantage of cheap electric power, he declared, has been disappearing for many years.

LABOR

Michigan Settlement: Michigan Chemical Co. employees, through their bargaining agent, Local 11-224 of Oil Chemical & Atomic Workers Union, last week accepted terms of a company-proposed three-year contract. The agreement ended a 17-day walkout by production workers at the Manistee and St. Louis, Mich., plants.

Management felt that it had won an important point by inclusion in the contract of a clause giving it the right to improve operating efficiency. The clause: "The company reserves the right to improve operation and maintenance of its plants by adopting new methods of work and production by eliminating waste of time and materials. If this requires elimination or combination or reassignment of jobs or job classifications, the company shall do so only after consultation with the union committee."

Other provisions of the contract call for a 5¢/hour wage increase on execution of the contract, additional



Excerpts From The
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Jacobus
Henricus
van't HOFF
1852-1911

Present views of stereo-chemistry stem from Jacobus Henricus van't Hoff's "La Chemie dans l'Espace." For his discovery of the cause of optical activity in carbon compounds, van't Hoff received in 1901 the first Nobel prize for chemical achievement.

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ADMINISTRATION

5¢/hour increases at the beginning of the second and third years, freezing into a new base rate the cost-of-living increases of the previous three-year contract, liberalization of insurance, holiday and other fringe benefit plans, and a new contributory pension plan.

Canadian Settlement: A month-long strike of nearly 200 employees at the polyethylene plant of Canadian Industries, Ltd., at Edmonton, Alta., ended last week with agreement between CIL and Local 16-666 of OCAW International Union on a contract calling for a 5¢/hour wage increase for all employees.

Pickets Part: At Tuscola, Ill., striking employees of U.S. Industrial Chemicals Division, National Distillers & Chemical Corp., agreed to let trucks and personnel of Illinois Farm and Supply Co. through their picket lines. Local 515, International Union of Operating Engineers, struck against USI Sept. 16, and pickets had prevented access to the farm supply firm whose plant is adjacent to USI's. Farm Supply has no quarrel with the union, but claimed that winter fertilizer inventories ready for shipment were being bottled up by strikers.

IDEAS

Foreign Impact: Du Pont, preparing for the seasonal upturn in anti-freeze sales, acknowledges the impact of foreign cars on its selling services by listing on its protection chart 18 of the most popular foreign cars and their cooling system capacities.

Layoff Employment: Du Pont has set up a job-finding service for employees laid off last week from its engineering department. More than 40 of some 200 clerical, technical and engineering people have new jobs. A task force of several dozen people at the Louviers Building at Newark, Del., and at Du Pont's engineering department reception room in the Wilmington offices have been making contacts and arranging interviews with other companies in the Wilmington area and throughout the nation. They have assisted in the preparation of resumes and in scanning the classified ads of 18 daily metropolitan newspapers.



Libby: Nearing settlement of AEC members' multimillion-dollar claim.

Atom Royalties Claim

The touchy problem of "just" compensation for U.S. government use of private inventions is again before the public. A current case might set a pattern for future settlements.

Within a few months, according to Atomic Energy Commission member Willard F. Libby, a claim for compensation by four scientists, who were responsible for a basic method of extracting nuclear fuel, should be settled. The claim might involve "tens of millions of dollars," based on a percentage of the value of fuel produced so far.

The four scientists—John Dunning, dean of the School of Engineering at Columbia University; Alfred Nier, dean of the School of Engineering at Minnesota University; Eugene Booth, physics professor on leave from Columbia; and Aristid Grosse, president of Temple University Research Institute—conceived the gaseous diffusion process for separating uranium-235 from the heavier uranium-238. Production of U-235, used in the first atomic bomb, thus far is valued at \$1-20 billion, depending on the method of calculation.

Dunn, Nier, Booth and Grosse established Basic Science Foundation to press their claim and to distribute, as grants for basic research by leading universities, any funds awarded be-

yond a small amount to the inventors themselves. Temple University President Robert Johnson was named as president and was asked as a layman to pick other members of the foundation's board.

The scientists applied for a patent in '40 after Nier had provided small amounts of different forms of uranium, concentrated by his mass spectrometer, for work by the other three scientists with Columbia's cyclotron. The three showed that U-235 could be split by slow neutrons to give atomic energy. Their work was classified and used by AEC.

KEY CHANGES

Merrill M. Smith to vice-president in charge of manufacturing, Amtico Vinyl and Rubber Flooring Division, American Biltrite Rubber Co. (Trenton, N.J.).

Roderic L. O'Connor to vice-president and general counsel, Ciba, Inc.

Kenneth J. Carson to vice-president and Atlantic district manager, Finishes Division, Interchemical Corp. (New York).

Victor J. Baxt to vice-president and general manager, Thompson Chemical Co. (Pawtucket, R.I.).

Markus D. Royen to vice-president and director of research, Apex Tire & Rubber Co. (Pawtucket, R.I.).

Clark E. Thorp to president, Fiber Products Research Center, Inc. (Beaver Falls, N.Y.).

Earle W. Mills to board chairman, **W. L. Martwick** to president, and **John E. Kenney** to executive vice-president, all of Foster Wheeler Corp. (New York).

Harry D. Feltenstein, Jr., to executive vice-president and general manager, Lithium Corp. of America (Minneapolis).

James A. Gibbs to director and technical director, Volk Radiochemical Co. (Chicago).

Harold R. Haskell to general manager, Penetone Co. (Tenaflly, N.J.).

Charles G. Miller to director of research and development, Isotopes Specialties Co., division of Nuclear Corp. of America.

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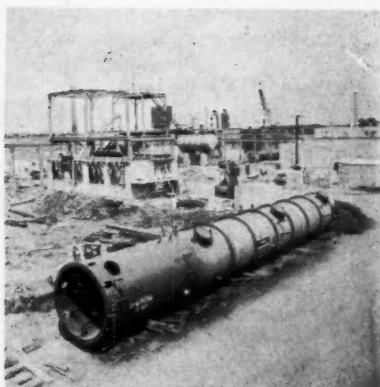
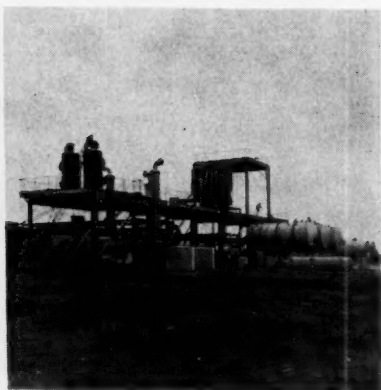
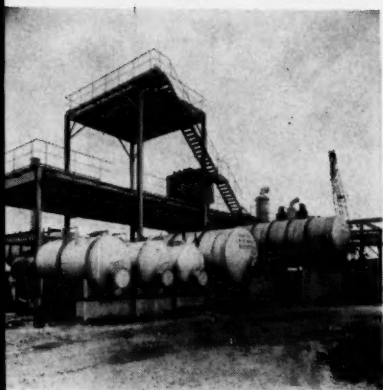
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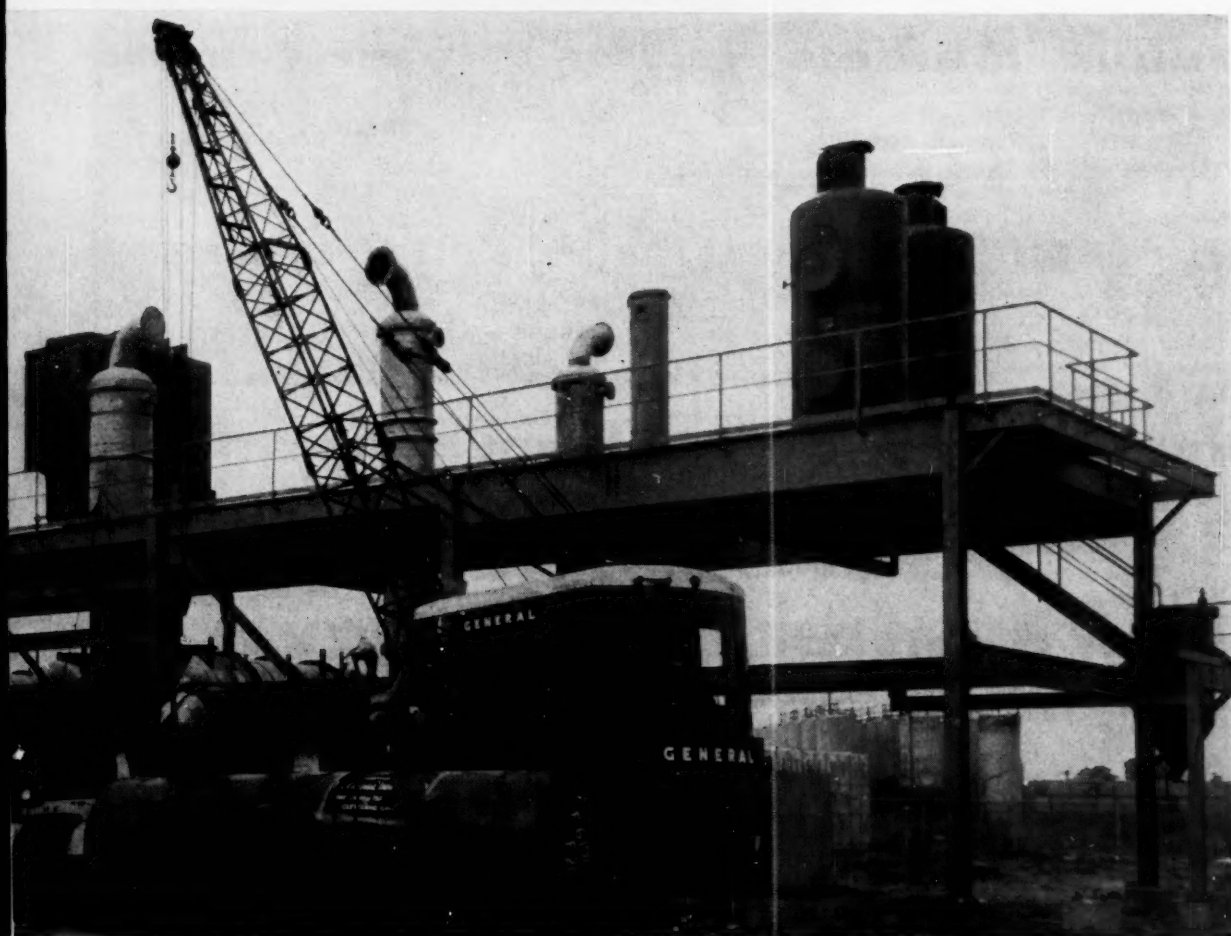
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SPECIALTIES



Paul Charlap, idea chaser, gets new products 'off the ground.'

Flyer in New Specialties

An original idea for a specialties product may or may not require genius, but it usually requires money to market. In fact, many inventors of specialties with plenty of potential never market them because they lack financial backing and merchandising skill. It's this combination that idea-seeking Paul Charlap (Scarsdale, N.Y.) is offering to anyone who has a potentially salable product.

Charlap, who chases ideas by private plane, has handled the sales development of several well-known chemical specialties — Nylast (a detergent for nylon stockings), the aerosol form of Air-Wick, and Savoy (a wash-and-wax liquid for cars). But he doesn't limit himself to chemical items — he sponsored Ready Tea.

Flexible Plan: Charlap seeks technical people who have good ideas but

don't have the money or selling know-how to capitalize on them. He then either invests his skill and money in making and selling the products (usually with the aim of selling to a larger firm later) or negotiates a deal between inventors and manufacturers, netting a 5% agent's fee (or a guaranteed minimum).

Charlap got into this "product talent scout" business about 10 years ago when he met a chemist who had come up with a washing agent for nylon stockings. The product worked, but the inventor ran into snags trying to sell it. Some two dozen companies "were interested," none enough to buy it. Charlap decided to try marketing the product himself. He was selling some products of his own at the time (among them a nail polish called Quick Q, and a mouth wash

dubbed Clorowash), but he thought the nylon wash had a big potential.

With \$100,000 — half of it his own — he set out to promote the new product under the company name of Shaw Products.

First distributed through drugstores, Nylast had trouble catching on—until Charlap, having spent almost \$80,000, decided to put it into grocery stores. When it was established, he put it into national distribution, later sold it to Seeman Brothers (New York).

Another product, the Savoy wash-and-wax, had a similar start. It was being distributed locally (in Chicago) but was not selling well. Charlap took it, promoted it with TV advertising spots. He says, "TV's great if you have something to demonstrate; otherwise use radio." The product began moving, was put into national markets, eventually was also sold to a large maker. Its inventor remained with the Charlap firm.

Two new Charlap-backed products are on their way. Next to hit the market will be a new powdered soft drink, so far unnamed. It is said to keep its carbonation several hours longer than currently sold products of its kind. Once it's under way, Charlap hopes to sell it to one of the big food manufacturers.

Another new item in work by Charlap is a chemical specialty for cleaning bathtubs. It also is as yet unnamed.

Working Alone: In finding, promoting and marketing products, Charlap works pretty much alone. He seeks people with the "nonexecutive look." Because people are often reluctant to talk about their inventions, he says he takes special care to assure them that he will not reveal confidences. "I need these people as much as they need me," he says.

Charlap's first step with a new idea is to "take it home for mother-in-law research," try it out on himself and other members of his family. This route, he says, has some interesting sidelights. He once had a chemical specialty, a squeeze bottle shoe polish, that seemed to have an exciting potential. He changed his mind when a pair of shoes on which he had applied the polish suddenly lost their soles. Another product, a gasoline additive, exploded in his car while he



ANNOUNCING OPENING OF HOUSTON OFFICE

To further expand its service to the chemical and petrochemical industries, Girdler Catalysts, Chemical Products Division of Chemetron Corporation has established an office at 4007 Bellaire Blvd., Houston 26, under the direction of Merle R. Likens. Telephone number is Mohawk 4-3987.

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SPECIALTIES

was driving it. Home-testing also explains why the walls in Charlap's home lather up when humidity rises.

After home-testing, Charlap tries a larger sample — perhaps 2,000 users. He finds that the office staff of a conveniently located business also makes a good test panel.

The next move is to test-market in a small city. Success there points to full-scale merchandising.

In the future, Charlap will hold on to more of his products instead of turning them over to others. He's especially interested in backing some industrial products and, probably because of his flying interest, products for the aircraft industry. He says he will make a flying visit to anyone with any good idea for a specialty, and will try to get it "off the ground."

Wrinkle Rating

What's the wash-and-wear rating of your textile resin—or the finished cloth? Two companies are now offering novel systems for gauging the characteristics of treated cloth.

Monsanto offers a do-it-yourself kit for \$20. It contains: five vacuum-formed styrene replicas of cloth, each wrinkled to a different degree. The user compares his washed cloth sample with the three-dimensional plastic swatches.

The newly established laboratories of Textile Research and Development Corp. (New York) uses a photographic method to evaluate wash-and-wearability. Samples of treated cloth must be sent to it for testing.

Wash-Wear Parley

Last fortnight's meeting of the Chemical Finishing Conference (held by National Cotton Council) in Washington, D. C., provided up-to-date figures on wash-and-wear clothing and its care.

Latest survey shows that 1.1 billion yds. of cotton were resin-treated for wash-and-wear and "minimum care" properties last year. NCC estimates that total output of woven cotton apparel fabric in '57 was 5.5 billion yds. and that approximately 20% of that was resin-treated.

Lawrence Marx, Jr., president of National Assn. of Finishers of Textile Fabrics, predicts that the introduction of men's resin-treated dress shirts,

no-iron sheets and pillow cases, plus gains in other apparel uses in the wash-and-wear field, will just about double the yardage of resin-treated cotton produced this year.

A separate report on bleaching cotton in home laundering was given by Rex Fink, of Clorox Co. He pointed out that nine out of 10 consumers doing laundry at home at least occasionally use bleach. Fink estimates that sodium hypochlorite liquid bleaches account for 90% of all home bleach sales.

Hotels List Specialties

American Hotel Assn. is now updating its list of approved chemical specialties. The listing, which serves as a guide to hotel purchasing agents, will include a host of chemical specialties. Mothproofers, rug cleaners, waxes, polishes, paints and detergents are a few of the products to be tested. Results of the product testing, now under way at Foster D. Snell, Inc. (New York), are expected to be published early in '59. Chemical specialties makers that want to participate in the new evaluation program should request authorization forms and fee schedules from American Hotel Assn. (221 West 57th St., New York, N.Y.).

PRODUCTS

Stabilizer: Argus Chemical Corp. (Brooklyn, N. Y.) is out with a new vinyl stabilizer, tradenamed Mark LL, that is said to offer superior heat and light stability and better maintenance of the true tones of organic pigments such as lithol rubine or BON reds.

Odor-Killing Quartet: Lever Brothers Co., Pepsodent Division, is adding two new fragrances (Evergreen and Garden Spice) to its aerosol Air-Wick line. The household deodorants, now available in four fragrances (Wild Flower, Natural, Evergreen, Garden Spice), will all be packaged in newly designed push-button cans. According to Lever, aerosol Air-Wick is in for "the biggest advertising and promotion program that has ever been used for the product."

Fatty Complexes: Swift and Co. (Chicago) has just added Flexals, a family of metallic, stearate-based complexes, to its line of soap and sur-



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SPECIALTIES

factant products. Current production is composed largely of sodium and calcium stearate, although limited quantities of other Flexal products are available, including those made with magnesium stearate, calcium oleate, lithium stearate and a modified water-soluble lithium stearate.

Home Cleaner: Soilaway, a new spot-cleaning fluid, is being marketed by the Murphy-Phoenix Co. (Cleveland). The new product comes in a high-density polyethylene container and reportedly is safe for all fabrics and colors.

Rubber Lubricant: Dow Corning Corp. (Midland, Mich.) is introducing a new lubricant, 4X Silicone Spray, designed to provide a faster and more convenient method of lubricating rubber parts to prevent squeaking.

Happiness Pills: Gradumet Desoxyn, a long-acting nervous system stimulant, is Abbott Laboratories' (North Chicago, Ill.) latest product. According to Abbott, active ingredient in the new tablet is Desoxyn hydrochloride, which inhibits the appetite, relieves depression, elevates the mood, counteracts sleepiness, increases efficiency and produces a sense of well-being.

Punching Varnishes: Reichhold Chemicals, Inc. (White Plains, N.Y.) has just come up with two cold-punching stock varnishes. Tradenamed Plyophen 5888 and Plyophen 5896, the new materials can be used in producing cold-punching laminates for printed-circuit uses.

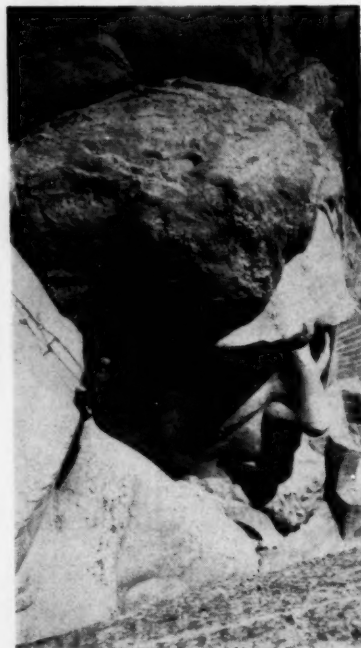
Pampers Poodles: Pooch-Poo, a shampoo for pets, is available from Eastenn-Dukes Chemicals, Inc. (Rogersville, Tenn.). Pooch-Poo is packaged in 5-oz. bottles.

One for All: Harco Chemical Co. (Cranford, N.J.) has come up with a new safety cleaner and degreaser for industrial cleaning. Called Harco Safety Spray, the new product's uses include heavy-duty degreasing of motors, diesel equipment, range hoods, exhaust fans, tile and glass. According to Harco, the new product, a concentrated solution of surface-active agents, buffered alkalis and solvents, can be diluted with up to eight parts of water, depending upon the soil and

type of surface to be cleaned. Cost: \$2.75/gal. in 5-gal. cans.

Mold Releaser: Peninsular Silicones, Inc. (Grand Rapids, Mich.), is offering a new mold release agent, trade-named MR-22. Peninsular says its new silicone-based product is effective as a semipermanent mold releaser for epoxy castings, polyurethane foams, ice, rubber and plastic goods.

Pipe Dope: Permacel (New Brunswick, N.J.) is now marketing its pipe joint sealant, called Permacel Ribbon Dope, in a new roll form. The product is claimed to protect pipe joints against corrosive action of virtually all chemicals and gases. It is sold in 260-in.



Facial for a Statue

The water-repellent that's being applied (*above*) by the man scrambling over George Washington's head at Mount Rushmore National Memorial is Siliphane. Siliphane, a clear silicone product made by The Upson Co. (Lockport, N.Y.), provides an invisible water-repellent coating that the Memorial caretakers hope will prevent deterioration of the massive sculpture. According to Upson, Siliphane penetrates the pores of masonry or stone, repels capillary water seepage and rain, yet permits it to "breathe."



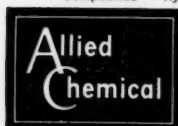
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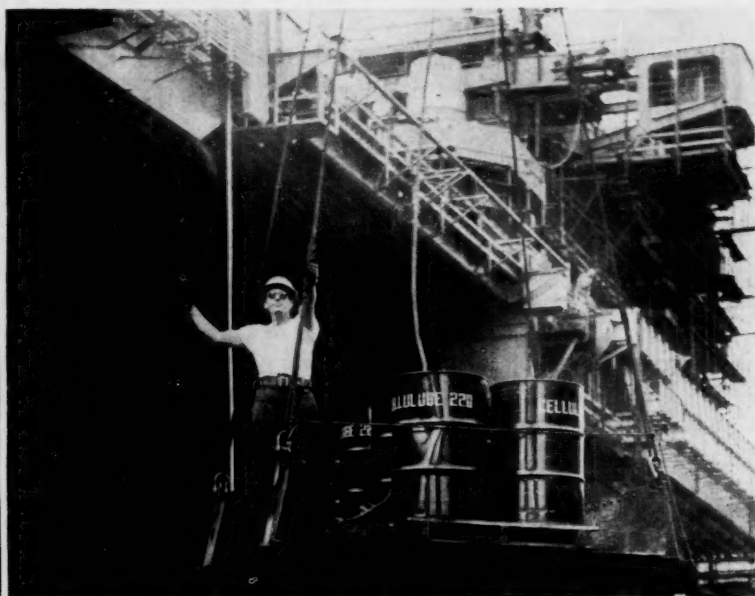
Yellow Dye: American Cyanamid Co. has just come out with a new homogeneous vat yellow dye trade-named Calcoloid Fast Yellow 6GL. It is said to combine a bright greenish yellow shade with a high degree of light-fastness, is applicable to raw stock, skeins, packages, piece goods and hosiery. End-uses include clothing, decorator fabrics, yarns and threads.

Water-Soluble Resin: Archer-Daniels-Midland Co. (Minneapolis) showed off a new water-soluble resin at last week's paint show in Cleveland. The new resin, tradenamed Arolon 1000, is said to eliminate the hazard of flammable solvents, yet retain the properties of high-quality, organic-thinned alkyd-melamine systems. ADM is suggesting Arolon 1000 for appliances, office equipment, metal furniture, auto interiors, toys

and other metal products using sprayed-on baking enamels.

Cold War: Glaxo Laboratories (London, Eng.) has come up with a new influenza vaccine, Invirin, which contains three strains of influenza virus vaccine. Strains are the Asian type, an epidemic influenza virus that's known as Type A and the latest B Type, which was isolated in Britain. Only one injection of the vaccine is required, according to Glaxo.

Outside Potential: National Starch Products' Resin Division predicts a growing repaint market for vinyl emulsion primers. According to Resin Division Manager H. J. Zahndt, repainting of weathered surfaces is the single largest market for exterior house paints in this country and presents a growing market for vinyl emulsion penetrating primers. Zahndt says that "the repaint market comprises more than 68% of the residential structures now in existence."



Hydraulic Fluid Joins the Fleet

The fire-resistant hydraulic fluid being hoisted aboard the aircraft carrier *Independence* (above) is Celanese's Cellulube 220. More than 30,000 gal. of the fluid will be used in the hydraulic systems of the deck-

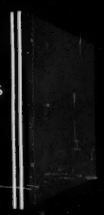
edge elevators of the *Independence*, the Navy's giant new *Forrestal*-class aircraft carrier nearing completion at Brooklyn Navy Yard. The deck-edge elevators will transport planes between the ship's hangar and flight decks.




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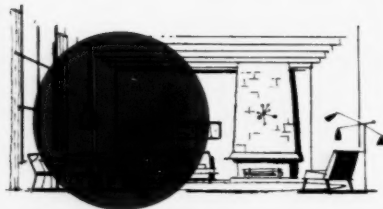
—check these advantages of iso

Since 1956 Oronite has been on-stream with xylene-derived isophthalic. Prior to 1956 Oronite invested eight years developing isophthalic. Not a commercial resin producer, Oronite supplies its raw material, isophthalic, to resin, paint and plastics producers throughout the world. Oronite, the original and most experienced producer of isophthalic, maintains distribution terminals at key consuming points in the East and Midwest to serve isophthalic and phthalic anhydride customers quickly. Look to Oronite, the one experienced isophthalic resource, for the most help in applying this new raw material to your individual requirements.



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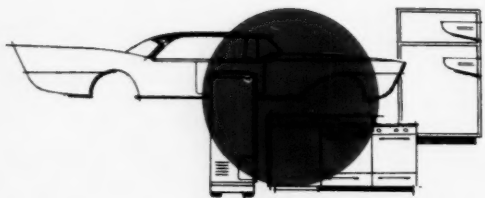
Employing an isophthalic resin, W. P. Fuller & Co., one of the nation's leading paint suppliers, says, "spectacular new house paint adds at least 2 *extra* years of paint beauty to your home." For the first time in years, new quality standards are a reality with isophthalic-based resins.



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Better at no cost premium. *Flats* with better washability, hiding and non-staining properties that are easy to apply and clean.

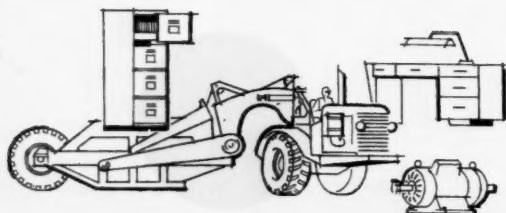
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Molded Fiber Glass Company, world's largest producers of fiber glass reinforced plastic products, says this about Oronite® Isophthalic, "tests made by Molded Fiber Glass Research Co. proved that an isophthalic-type polyester resin gave us both increased toughness and increased craze resistance at all normal temperatures.

We have adopted isophthalic-type polyester resins in all our boat hull and automotive applications."

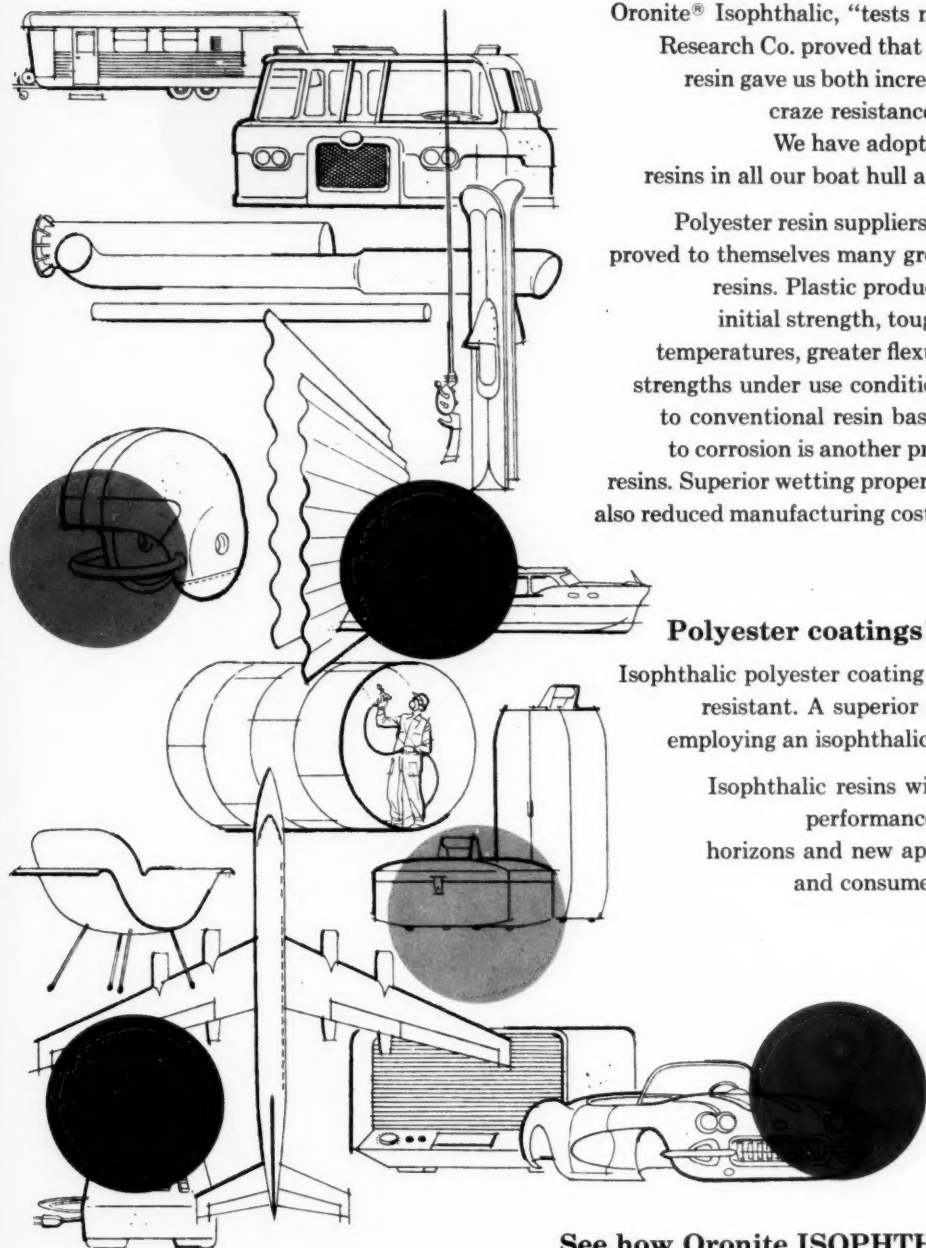
Polyester resin suppliers and plastics fabricators have proved to themselves many great advantages of isophthalic resins. Plastic products are produced with greater initial strength, toughness, higher heat distortion temperatures, greater flexural strength — and find that strengths under use conditions are considerably superior to conventional resin based plastics. Better resistance to corrosion is another proven benefit from isophthalic resins. Superior wetting properties of isophthalic resins have also reduced manufacturing costs by lowering time and labor.

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Isophthalic polyester coating more corrosion and chemical resistant. A superior adhesive patching compound employing an isophthalic resin was recently marketed.

Isophthalic resins with such important advanced performance characteristics open up new horizons and new applications for both industrial and consumer reinforced plastic products.

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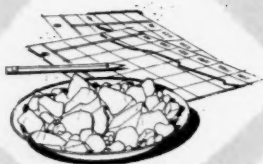


It's worth your time—today— to get the full story on Oronite Isophthalic

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Demonstrations! Oronite field representatives can demonstrate to you the superior properties of isophthalic resin coatings—in relation to your particular requirements. They can put you in touch with a paint manufacturer or resin producer who can supply a finished product for your application.



Samples. Resin samples are available from selective resin suppliers or directly from Oronite. Samples together with complete data on their formulations and instructions for their preparation may be secured for your own laboratory evaluation.



Technical seminars. If you would like a group within your organization to hear and see the complete isophthalic resin story—Oronite can arrange to conduct a technical seminar for your group. Oronite will contribute technical assistance to your individual problem and solution.

Please address all inquiries to Oronite's Executive offices — listed below



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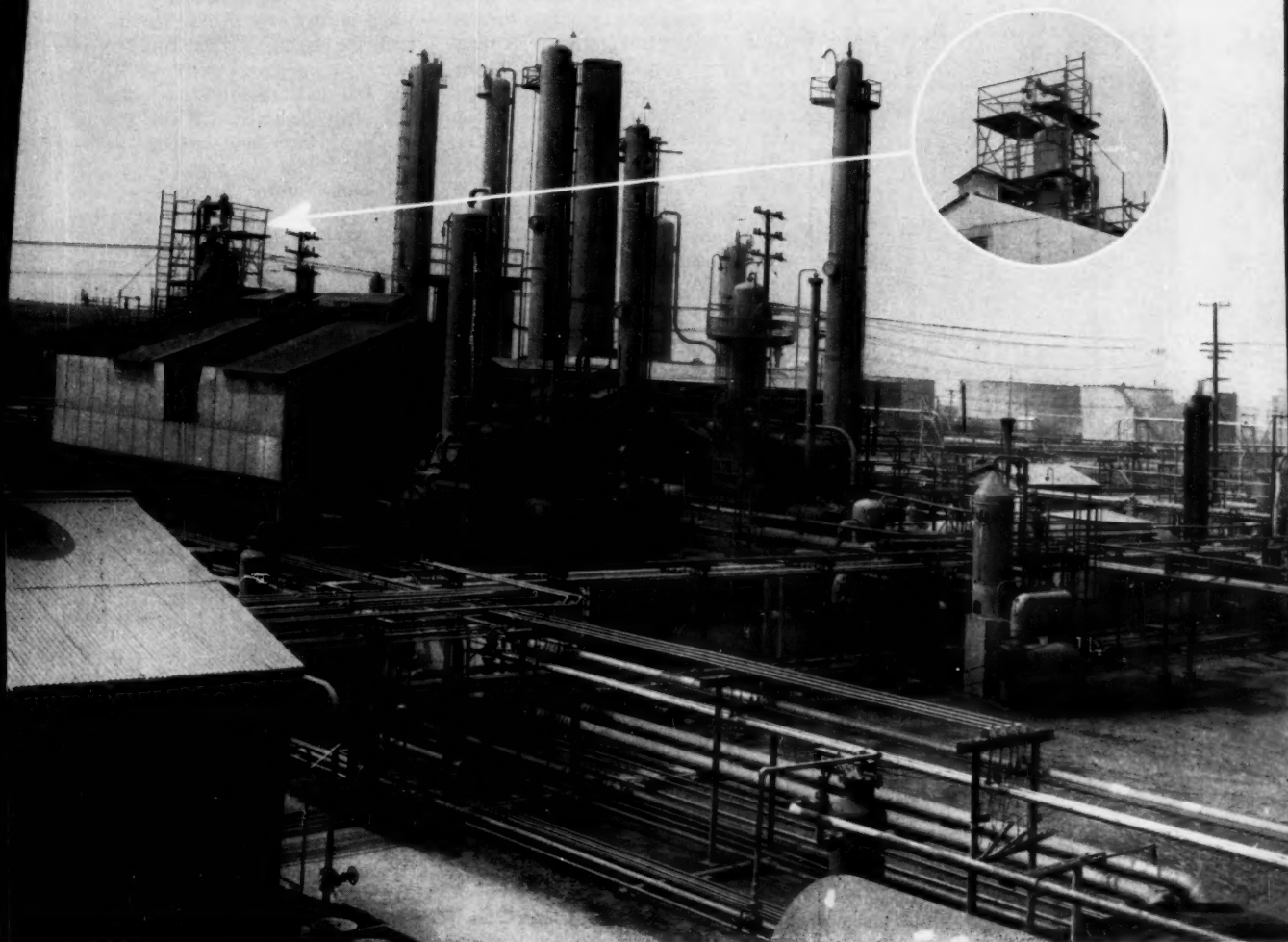
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New reactor (inset) reduces operating costs, increases capacity of Shell's isobutane plant.

New Unit Converts More Butane per Pass

Shell Oil Co. this week disclosed some details of a new process modification that boosts yields, reduces equipment requirements of liquid-phase butane isomerization units. The key: a new reactor that provides higher once-through conversion of butane into isobutane.

The first commercial installation is now onstream at Shell's Wilmington, Calif., refinery, has topped output of old unit it replaces by some 18%. No other equipment except the new re-

actor, says Shell, was added to achieve the increase in capacity. Conversion of normal butane into isobutane was boosted to about 60% per pass, compared with 51% conversion from the unit's original reactor.

The new system isn't, of course, limited to modernization of existing isomerization plants; it also offers potential advantages to new facilities. For example, the capital investment in a new plant, Shell estimates, would be about 15% less than in an

old plant of equivalent capacity. Reason: equipment size and process requirements (e.g., column diameters, heat-exchanger areas) are reduced all along the line as a result of the higher isobutane content of the reactor product. This result is figured to be particularly significant in the deisobutanizer section of the plant, where lower volume-handling requirements permit relatively large savings in capital and operating costs.

Potential "design" advantages in



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
UCON heat-transfer fluids do not ordinarily sludge, coke, or gum after months of use at temperatures as high as 450-500°F. Thus, electric immersion heaters and other heat-transfer surfaces stay clean and give long, continuous operation.

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ENGINEERING

the new reactor system—it may well provide clues to the design of more efficient reactors for other contacting problems.

Isobutane Process: In Shell's liquid-phase isomerization process, normal liquid butane from storage is first dried by alumina to a water content of 0.001% or less (by weight), then preheated to about 180 F. The heated feed goes through a catalyst scrubber column and into the reactor, where it rearranges in contact with a liquid catalyst of aluminum chloride (7%) in antimony chloride (93%).

Isomerizate flows from the reactor to a catalyst removal column, where dissolved catalyst is separated by simple fractionation. Isomerizate comes off overhead, is condensed and collected in an accumulator. After removal of light ends, part of the liquid product is returned as reflux to the catalyst removal column, the rest passes to a hydrogen chloride stripper for removal of acid gas and then to a light caustic wash. Finally, the isomerizate is fractionated in the deisobutanizer to give isobutane and unreacted normal butane.

The reactor in the original isomerization plant consisted of an autoclave equipped with a mechanical agitator. With this, back-mixing inevitably occurred, reducing contact of catalyst with the reactants. Result: conversion per pass was 50-52%—far below the 71% conversion theoretically possible at the process temperature of 195 F.

After a study of reaction kinetics indicated the extent to which "staging" of the reaction would improve the approach to equilibrium—and, therefore, the conversion per pass—Shell's next move was to use two reactors in series. Testing of the modified system on a plant scale confirmed the expected marked boost in conversion.

Shell engineers then hit on the new reactor design, quickly built a 750-bbbl./day (of feed) reactor and ran a six-week trial. Results were so impressive that Shell immediately ordered the new 3,500-bbbl. day reactor now onstream at Wilmington.

Details Guarded: Details of reactor construction are not available. All Shell will say about the system's mechanical features is that the unit achieves a close approach to "plug" flow, virtually eliminates back-mixing. To prevent corrosion failures

the reactor is nickel-lined, as is other equipment (vessels, pumps and lines) that contacts the catalyst.

So far, only the Wilmington plant has the new reactor in operation. But the company says it has plans to install the system in its liquid-phase isomerization plants at Wood River, Ill., and at Curacao, West Indies. It will likely be slated for use also in any new plants built by Shell or by process licensees.

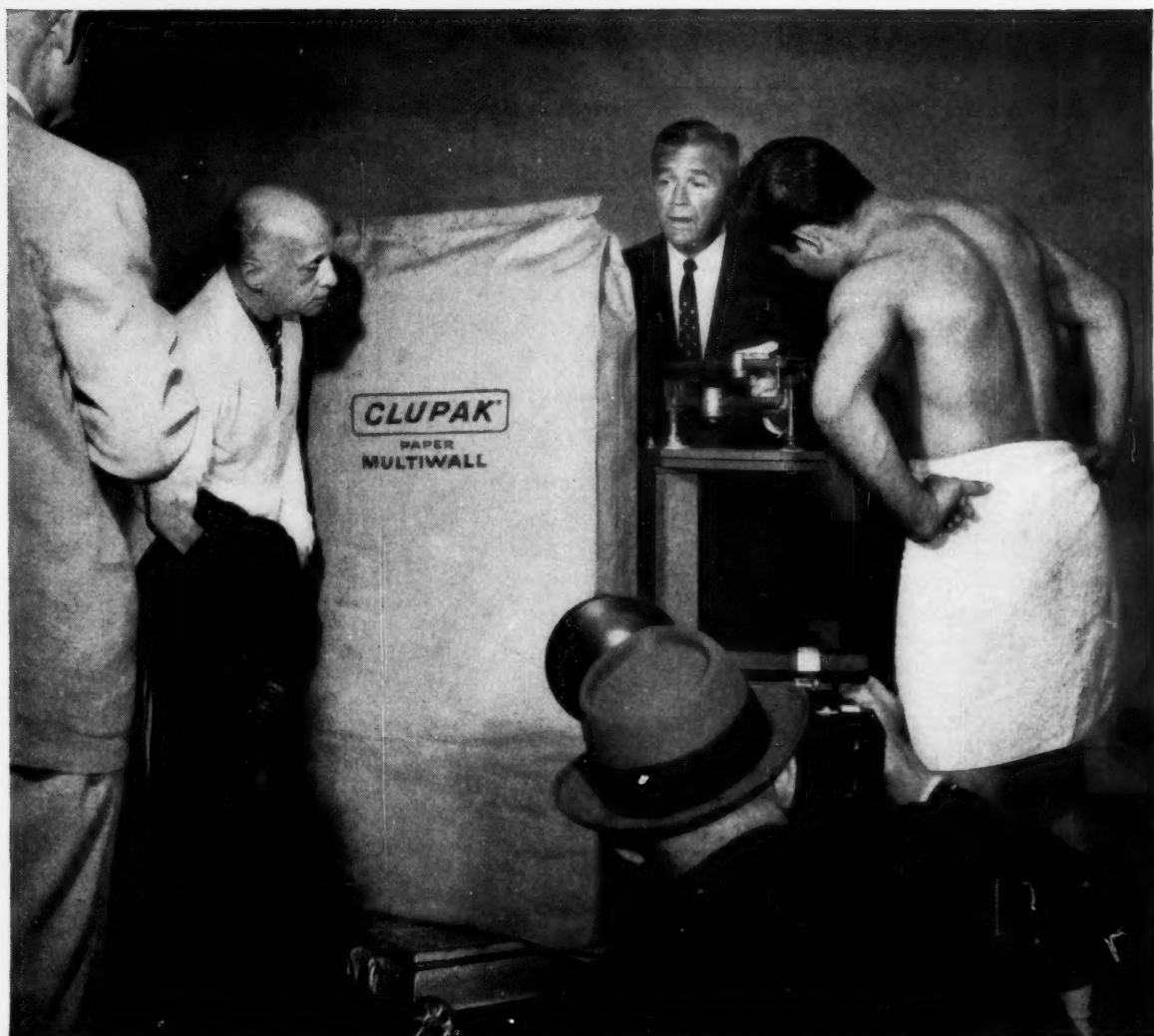
Useful Future: In light of the present octane race in motor gasolines, Shell's achievement is especially timely. Isobutane is required to make alkylate, which, when blended with other components of motor gasoline, results in a premium-grade fuel. And this method of meeting higher octane requirements is gaining the favor of refiners.

Though there appears to be a sufficient supply of the olefins (e.g., propylene, butylene, amylene) needed to meet stepped-up alkylate demands, isobutane is relatively scarce. But since it has highly desirable blending properties, refiners have a stronger incentive to convert the more plentiful normal butane.

With the addition of a small compressor for circulating hydrogen, the Shell process may also be used to convert normal pentane into isopentane. Pentane conversion runs 5-10% higher than butane conversion at the same temperature because equilibrium in the five-carbon-molecule system favors isopentane to a greater extent.

From the standpoint of process economics, Shell has compared its modified isomerization process with existing vapor-phase techniques, is firmly convinced that the system has a decided competitive edge—much lower capital and operating costs.

As yet, Shell hasn't switched over completely to the new reactor system. In an unusual setup at Wilmington, it is operating the new and old reactors alongside each other. But this was done to take advantage of the old reactor still in the line. And it's unlikely that Shell would expand under those conditions. Rather, it would probably replace the present two-reactor system with a large single reactor of the new type, when the old reactor had to be shut down for maintenance. After all, there's no sense in settling for half the benefits of its brand-new isomerization process.



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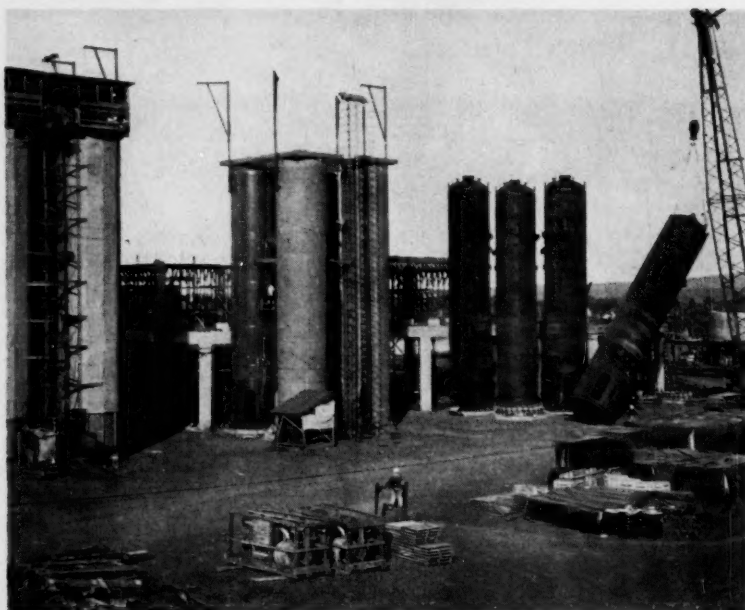
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First of giant reactor batteries go up . . .



. . . at Cuban nickel-cobalt leaching plant.



Lineup for Nickel Leaching

Sixteen 55-ft.-high reactors will make up the world's largest nickel-cobalt ore leaching plant, with a capacity of 2.3 million gal./day of mixed ore and acid. Freeport Sulphur Co.'s subsidiary, Cuban American Nickel Co., expects to have the plant in operation by mid-'59.

The reactors, erected at Moa Bay in Cuba's politically unstable Oriente Province, form the heart of a complex that will include other "world's largest" facilities. Supplying

the sulfuric acid will be the largest acid plant ever built at one time (1,300 tons/day of 98% acid). And the hydrogen sulfide used in precipitating nickel and cobalt sulfides from the leach solution will be produced in the largest facility of its kind (60 tons/day).

The plant site also includes a 1.5-million-cu. ft./day hydrogen plant and a 10-acre area of thickening tanks for the ore solutions. Total cost of the project: \$119 million.

Cutting Nuclear Costs

Babcock & Wilcox engineers are pushing the development of two new reactor engineering concepts designed to reduce nuclear fuel and equipment costs.

- Technique improvement is typified by the "spectral shift-controlled" reactor, in which varying concentrations of heavy water are used to replace the control rods conventionally used to regulate reactor operation.

- Equipment improvement is shown by the new coolant system, using a suspension of fine solids to boost the heat-carrying ability of coolant gas.

Water Control: The new reactor control technique is designed to control a higher-level reactivity over the lifetime of a water-moderated, water-cooled reactor core. The plan calls for use of a high (about 80%) initial concentration of heavy water, rather than control rods, to control the high reactivity of "excess" fuel required for the original core charge. As the extra fissionable material is burned up, the heavy water is gradually diluted with light water to a lower concentration (about 30%).

Advantages seen: core life may be extended to as much as 40,000 megawatt-days/ton of fertile material—more than twice that expected from a conventional pressurized water reactor; fuel cost may be reduced as much as 1 mill/kwh., since the new method is expected to increase the average conversion ratio. By the elimination of control rods, nonuniform zone-loading techniques that may boost heat capacity of a given core size by 75% may be used.

But a preliminary development program is necessary, says B&W, to solve major problems related to nuclear behavior, operational control and radiation stability of fuel elements, and reconcentration of the heavy-water coolant mixture.

Gas-Suspension Coolant: Key to the new coolant being studied by B&W engineers is the use of fine particles (less than 5-micron diameter) of graphite or other solids to increase the heat transfer and heat transport properties of gases.

The company has experimented with graphite-carbon dioxide mixtures with densities up to 8 lbs/cu. ft., circulated at 35 psig., 300 F at a



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Product Improvement—One Snell client found their product, an adhesive bandage, slipping in quality. Tape was going gooey in storage on druggists' shelves. Snell research helped this client bring his product quality up to equal the best on the market, and retain his share of sales.

Product Evaluation—A Snell brewery client wanted to expand production and take advantage of a more efficient production technique but feared the taste of the beer might suffer. Snell food technologists, taste panels, and engineers checked the new process and hundreds of samples of beer made under new and old systems, recommended the switch to the more profitable modern process. The change went unnoticed by the customers, and sales continued to climb.

Market Research—A Snell client with a waste product had briefly considered building a plant to use it to manufacture another product; but had given up after their own brief survey showed the new product to be already overproduced. When they consulted Snell for checking, however, Snell predicted there would be a shortage within three years. The client waited two years, built the plant—and now has a profitable new product instead of a waste!

Toxicology—One of the largest frozen food companies began getting complaints on the flavor of one of their green vegetables. Since hundreds of thousands of dollars were at stake, they consulted Snell to find out what was wrong. Snell by analyzing tests, and checking on the farm, was able to prove that the taste—actually toxic—was due to a new type of insecticide sprayed on the fields hundreds of yards away on a windy day long before the harvest!

Engineering—A large midwestern firm desired to produce its own brand of instant coffee, to possess outstanding flavor, body, and bouquet. They engaged Snell to handle all details, from design to engineering, to supervision of actual process startup. The fine qualities "built into" this resultant product made it such a success that Snell was commissioned to enlarge the plant, which has recently gone into production.

What's Your Product Problem?—Whatever it is, and whatever your product field—chemicals, chemical specialties, personal products, pulp and paper, protective coatings, plastics, textiles, foods, petroleum, rubber—Snell has men who "know the score" in that field, and who can work with you creatively and profitably in developing, producing, protecting, and marketing new ideas. This broad experience can be decisive in protecting not only your ideas, but also the thousands of dollars you spend developing them. And the cost of Snell service is less than you might imagine! Half the jobs we do cost less than \$1000!

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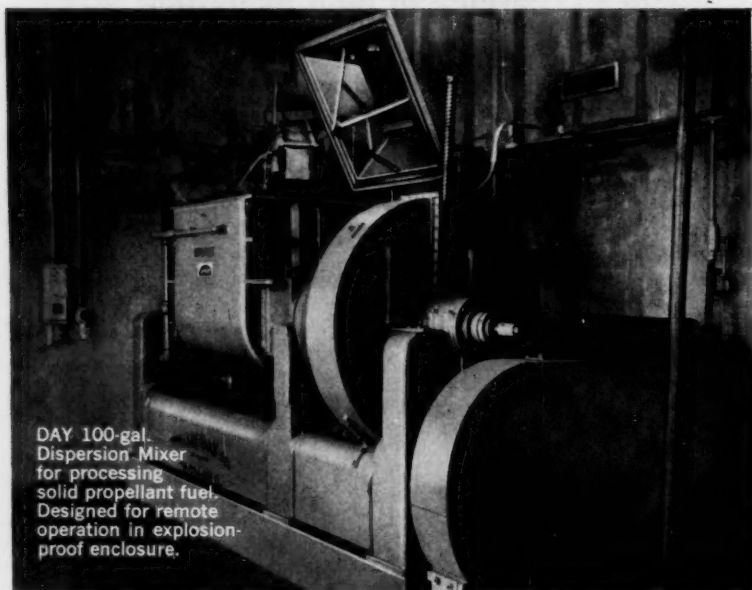


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ENGINEERING

velocity of 40 ft./second. Heat transfer rate with the gas-suspension exchange medium increased by a factor of eight over that for carbon dioxide under the same conditions. In addition, heat transport around the loop increased by a factor of 21. This improved heat capacity of the coolant, says B&W, permits an increase in reactor inlet temperature to 487 F (compared with 275 F inlet temperature at Calder Hall), also results in a significant improvement in steam cycle efficiency.

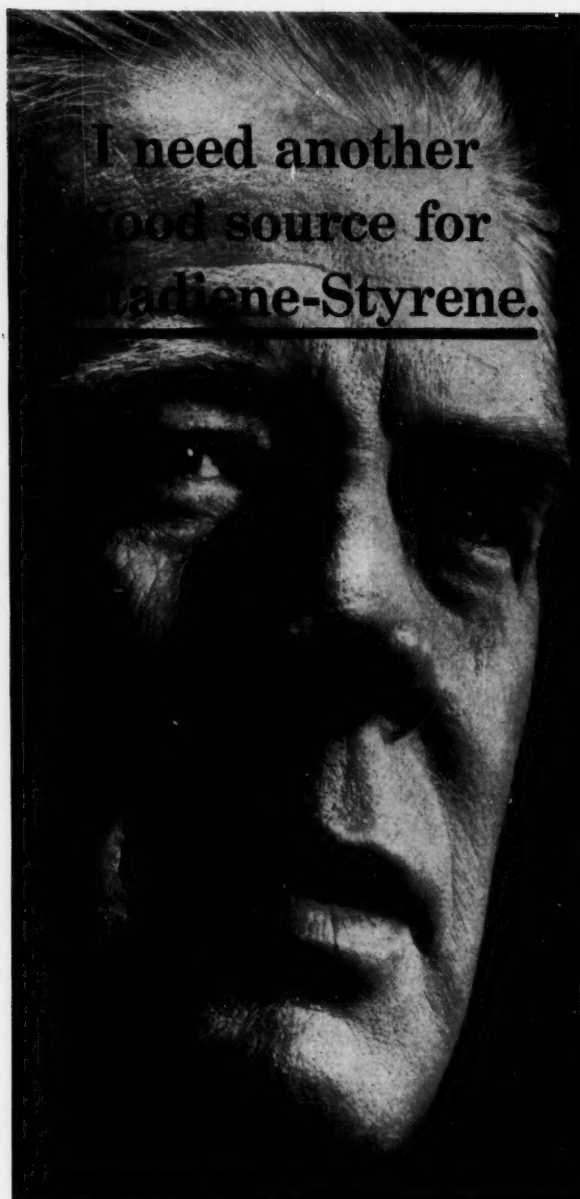
Cost of piping for pressurized water and gas-coolant systems are 6 to 12 times greater, says B&W, than equivalent gas-suspension piping.

Other attractive possibilities for gas-suspension coolants, the company adds, include replacement of organic media in chemical process, reheat and other heat transfer applications.

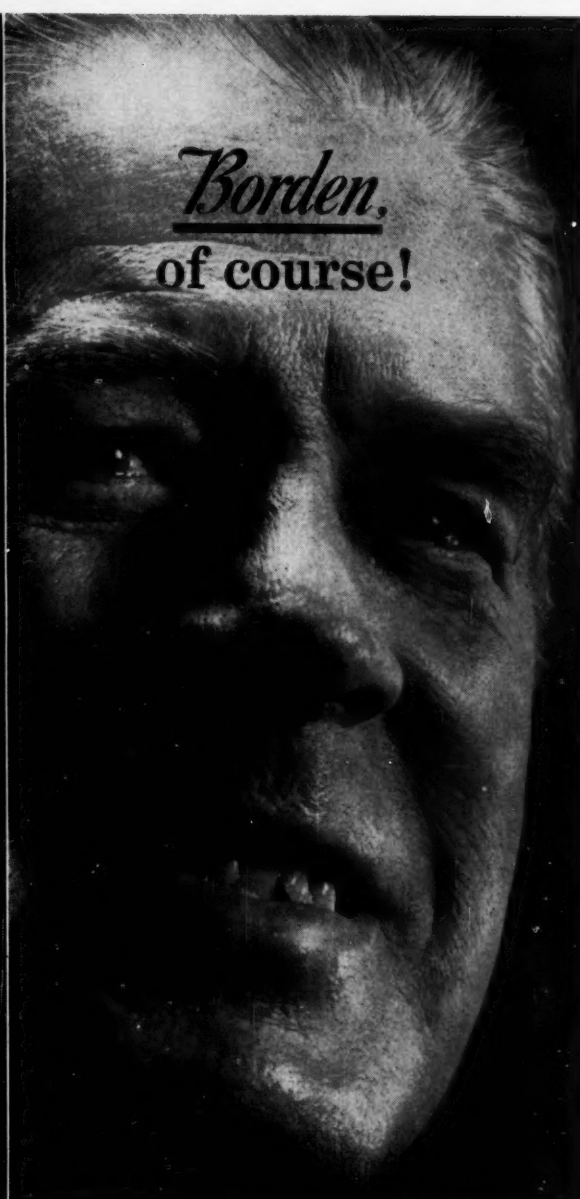


Fuel-Cell Lighting

The two 15-watt light bulbs that provide illumination for the photograph above are powered by an experimental 24-volt fuel cell developed by Allis-Chalmers Mfg. Co. (Milwaukee). Efficiency of the demonstrated unit is in the broad 50-85% range of conversion of chemical energy into electricity (*CW*, Sept. 21, '57, p. 119), but A-C's goal is 90% conversion.



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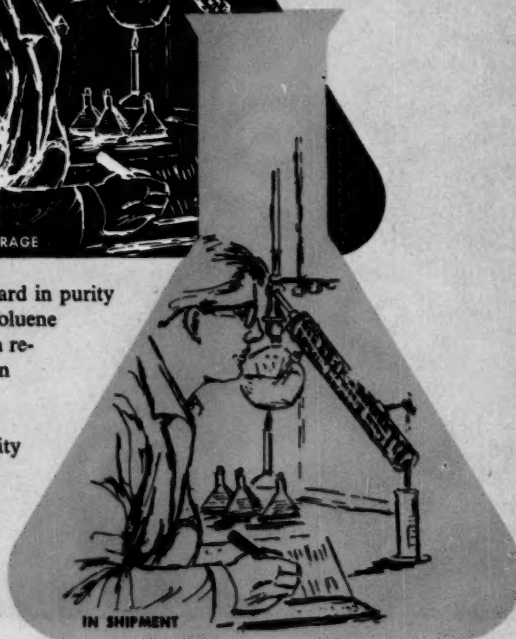
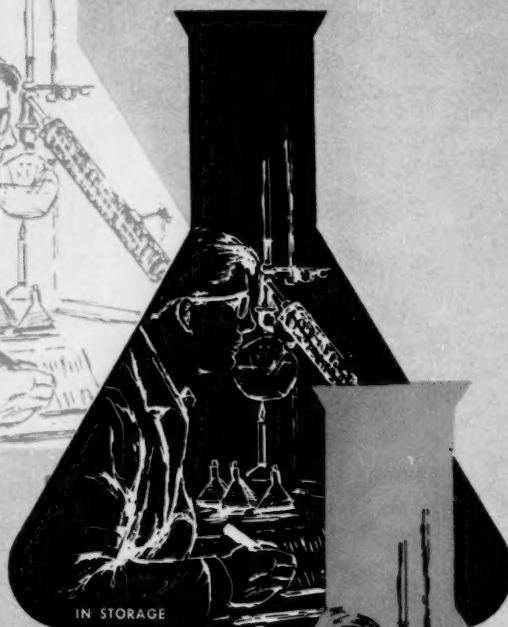


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CHEMICAL DIVISION

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RESEARCH

An Antibiotic Is Born

Several new antibiotics and antibacterial agents made their debut in Washington, D.C., this week at FDA's Sixth Annual Symposium on Antibiotics. But a hopeful new broad-spectrum antibiotic, called actinobolin, held center stage.

The newcomer, developed by Parke, Davis, is a potent inhibitor of various Gram-positive and Gram-negative bacteria *in vitro*, also shows activity against certain forms of cancer in lab tests.

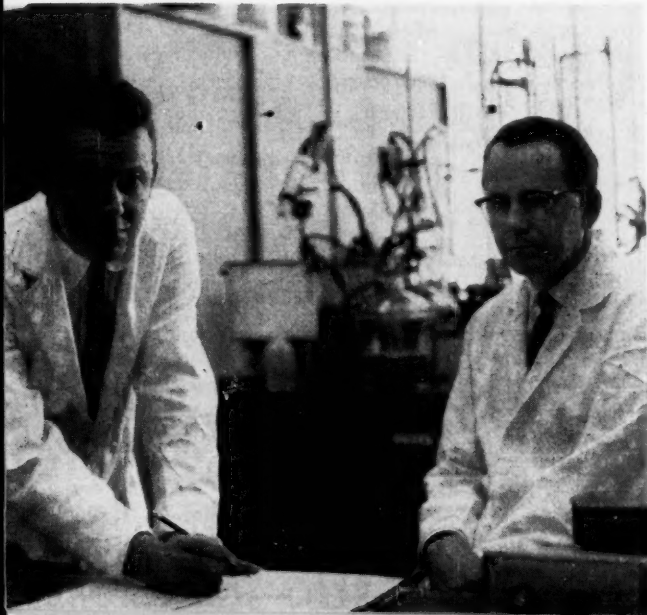
Right now, the drug is getting extensive clinical trials, results of which will help determine whether P-D sets up full-scale production facilities. Limited output of the drug is being supplied by a pilot plant for testing.

There's no data yet on how the drug performs in therapy, nor which diseases it will best combat. Co-discoverer Robert Pittillo points out that clinical testing is a long process; there's no definite way to predict performance of a new drug. But he believes that actinobolin will work best against Gram-positive microorganisms, says there have been no unfavorable reports on its toxicity. Lack of toxicity in mice tests is a big reason why P-D is interested in further exploring the drug's potential.

Like most new drugs, actinobolin represents the combined effort of any array of researchers. Pittillo and John Ehrlich were only two of 13 P-D staffers who authored the report on the new antibiotic's origin and biological evaluation.

Theodore Haskell and Quentin Bartz traced actinobolin's isolation and characterization. Microanalyses of its crystalline acetate and sulfate salts support the empirical formula $C_{13}H_{20-22}N_2O_6$ for the free base. Salvatore Fusari and H. E. Machamer described in

ISOLATION was by chemists Haskell, Bartz.



DISCOVERY was work of Fusari, Machamer.

SCALE-UP was work of Fusari, Machamer.



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RESEARCH

detail a scale-up of the fermentation process that produces actinobolin from aerated broth cultures of a *Streptomyces*. Their successful pilot plant uses 2,000-gal. fermentors, a big step up from the 30-liter stirred jars used to make the material in the lab.

Animal tests at the Sloan-Kettering Institute for Cancer Research (New York) yielded a varied picture of actinobolin's activity. It is active against transplanted mice leukemias, although resistance develops. But no cross-resistance to amethopterin, diazo-oxonorleucine, or 5-fluorouracil was observed—suggesting that the antibiotic acts on mouse leukemias by a different mechanism than do these other antileukemic agents.

In tests on transplantable human tumors growing subcutaneously in rats, inhibition of tumor growth was moderate to good when the compound was administered intraperitoneally beginning 24 hours after tumor transplantation. But, little or no effect was observed when the initial dose was given four days after transplanting.

Other tests were less promising. For example, in mice conditioned with X-rays and cortisone, actinobolin showed no significant antitumor activity when orally or intraperitoneally administered. There's possibility, however, that the conditioning agents may diminish actinobolin's activity.

Screened Out: Another new antitumor agent, streptovitacin, is being researched by Upjohn. It is also a *Streptomyces* fermentation product, first observed in a screening program at the University of Southern California (Los Angeles) School of Medicine. Upjohn has isolated and purified the agent from the culture filtrate, reports the principal ingredients are streptovitacins A and B, white crystalline isomeric solids with the molecular formula $C_{15}H_{23}NO_5$.

Streptovitacin A, tested against mouse and rat tumors by Upjohn, inhibited five out of six tumors when treatment started within 24 hours after the tumors were planted. But toxic symptoms were noted at high dosage levels, and the compound is getting additional study.

While a lot of news at the symposium was made by antibiotics—either new ones or new findings with those clinically established—other antibacterial agents shared the spotlight.

Synthetics, Too: Eaton Laboratories,

division of The Norwich Pharmacal Co. (Norwich, N.Y.) trotted out furmethanol, a new nitrofurantoin said to be potent against species including *Staphylococcus*, *Vibrio*, *Bacillus Diplococcus* and *Escherichia*. These conclusions are based on laboratory tests on mice and *in vitro*.

Johnson & Johnson (New Brunswick, N.J.) researchers added another synthetic, phenacridane chloride, to the choice of drugs in topical therapy. They tested the compound against a number of antibiotic-resistant staphylococci strains, found the latter uniformly sensitive to the new drug.

New Sulfas: Sulfonamide drugs, the symposium disclosed, are a long way from being outmoded. A new one: 4-sulfanilamido-2,6-dimethoxypyrimidine, also called sulfadimethoxine. William Boger, reporting on tests conducted on patients at Norristown State Hospital (Norristown, Pa.), says the drug appears to offer "the potential of great flexibility of oral dosage schedules for all of the therapeutic and prophylactic uses for which the sulfonamides have been found effective." He compared the drug (in the same patients) with sulfasoxazole, and sulfathiazole (sulfathiazolidole).

Another new sulfa, featuring a high degree of safety, was reported last week by Hoffmann-LaRoche (*CW Technology Newsletter*, Oct. 11). Called Madribon, it is 2,4-dimethoxy-6-sulfanilamido-1,3-diazine.

Arpad Berczeller, of Sea View Hospital (Staten Island, N.Y.) department of bacteriology, revealed that a new steroid acid amide of diamino diphenyl sulfone is an active inhibitor of influenza virus A in the chick embryo. Results with the compound, labeled B139, were unexpected since other sulfones and sulfonamides have been ineffective against clinical and experimental influenza.

Amoebic infection is the target of another new chemotherapeutic agent, 4,5-dichlorosalicylanilide. Researchers at University of California's department of pharmacology and experimental therapeutics tested the compound successfully on machques (a type of monkey).

This year, the symposium on antibiotics drew 181 papers—seven on actinobolin. That's a convincing sampling of the effort researchers are putting into finding still better "wonder drugs."

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141	Dimethyl Ether of Bisphenol Ether $\text{CH}_3\text{OCH}_2\text{CH}_2\text{OCH}_2\text{CH}_2\text{OCH}_3$ (DIBLYME)	167.0	70.0	1.0
161	Tetraethylene Glycol Dimethyl Ether $\text{CH}_3\text{OCH}_2\text{CH}_2\text{OCH}_2\text{CH}_2\text{OCH}_2\text{CH}_2\text{OCH}_2\text{CH}_2\text{OCH}_3$	216.0	111.11	1.0
181	Tetraethylene Glycol Dimethyl Ether $\text{CH}_3\text{OCH}_2\text{CH}_2\text{OCH}_2\text{CH}_2\text{OCH}_2\text{CH}_2\text{OCH}_2\text{CH}_2\text{OCH}_2\text{CH}_2\text{OCH}_3$ (Bisphenol A Tetraethylene Glycol)	253	140.5	1.05



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Fisher and Sudarsky: For employee candidates, a whirlwind tour.

Totting Tab for Recruits

At Pacific Yeast Co.'s headquarters in the little (population 6,500) agricultural community of Wasco, Calif., two men sat down to do a little arithmetic last week. Founder and director, Jerry Sudarsky, and research director, Robert Fisher, totaled the cost that was required to assemble their 65-man technical staff (50 degree-holders). Lesson: if you're locating a research center far from a major city, be prepared to spend plenty of time and money on recruiting.

At the peak of their recruiting drive last year, Sudarsky and Fisher spent about 30-40% of their time recruiting (they now spend 5%). About \$1,000/month went for telephone calls, another \$1,000/month for transportation (both for the potential employees and visits to recruiting centers). Roughly \$100/month was spent for advertising.

All told, their bill ranged from \$1,200-2,500 for each person hired. Included: transportation, in some cases, for the employees' wives; hotel and miscellaneous expenses.

Sudarsky says the game was worth the candle: "We built up a good staff, but it would have been a lot cheaper if we had our plant somewhere else. Most of the people came from back East."

Case History: At the height of Pacific Yeast's recruiting drive, about 250-300 people were contacted by mail. Almost all replied. About 40 replies warranted a followup; all were invited to Wasco, and all came. Of this group, 15 researchers were put on the payroll.

The company placed ads in the *New York Times* and in chemical trade publications, contacted colleges and employment agencies, solicited the names of employment candidates from employees and generally left no recruiting stone unturned.

Candidates usually flew to Bakersfield, about 30 miles from Wasco, where they were met by Sudarsky or Fisher. A stop at a Bakersfield inn was followed by interviews and a tour of the labs.

Prospects were first told all about the company—young, aggressive, vigorous, growing. Since the firm is relatively small (total of 150 employees), Sudarsky explains, it offers a family atmosphere, good *esprit de corps* and chances of rapid advancement. New laboratories, management's liberal attitude toward professional development (they send as many men as possible to national association meetings, e.g., Gordon Research Conference), and salaries that compare favorably

with the national average are other convincers.

The company's profit-sharing plan, according to Sudarsky, pays as much as 15% of annual salaries. The firm also offers free life insurance and medical plans. Another selling point is the California climate and living conditions.

Not All Sunshine: But despite these attractions, Sudarsky admits, it's still not easy to attract top personnel. Many researchers, he finds, prefer a metropolitan location. Wasco isn't near a major university; staffers can't get further schooling there or have the use of libraries, which is considered to be a major factor.

But the company is confident it can continue to attract the right kind of researcher. About 35 more are needed to fill the present goal of a 100-man staff. Sought are biochemists, analytical chemists, bioengineers, microbiologists, organic chemists, and lab technicians.

The firm's total employment by next year is expected to be near 200. Considering the company's rapid growth (two employees in '46, 13 in '52), there's more than a fair chance it will meet its researcher quota.

PRODUCTS

Brewer's Note: Interchemie AG. (Zurich, Switzerland) has been appointed European sales agent for Amber BYF, a new fermentation media component made by Amber Laboratories, Inc. (Milwaukee). The product is a dry, free-flowing, water-soluble fraction of autolyzed brewer's yeast, containing over 9% total nitrogen, of which more than 35% is amino nitrogen. Price: 25¢/lb. in car lots, 35¢/lb. in ton lots, f.o.b., Milwaukee.

Catalyst: Houdry Process Corp.'s (Philadelphia) latest entry is a foaming catalyst called Dabco (triethylenediamine). Suggested uses: for foaming one-shot polyether systems, polyether prepolymers, dimer acid esters, adipic esters and copolymers of dimers and polyethers, and adipates and polyethers. It also has possibilities for use in urethane foaming.

Blood Plasma: Cutter Laboratories (Berkeley, Calif.) has developed a new

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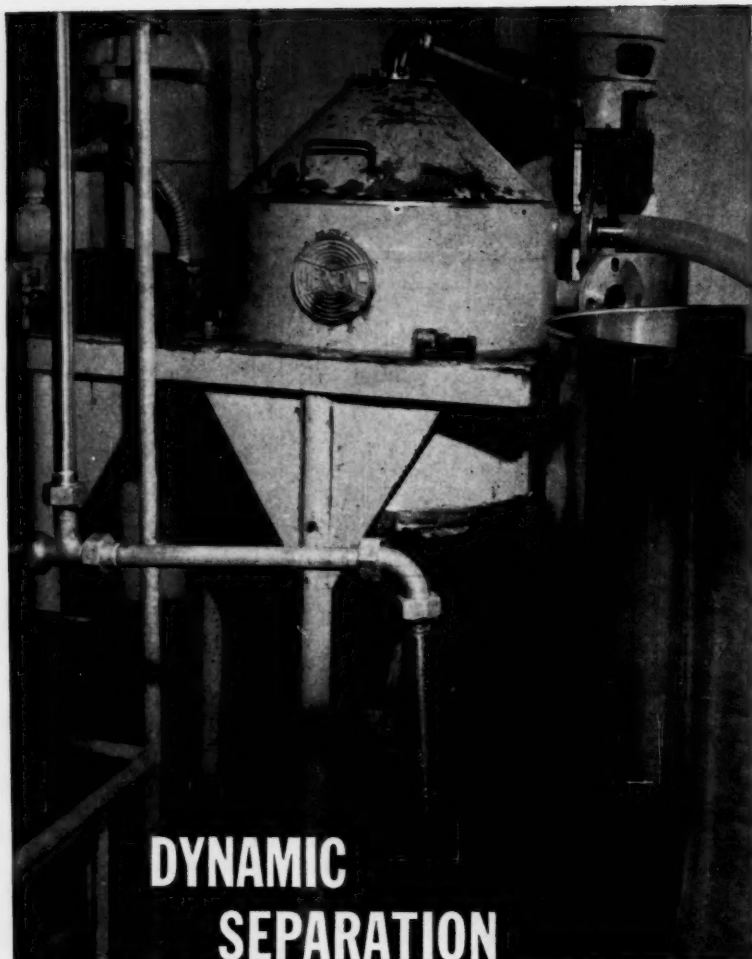
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RESEARCH

type of blood plasma called plasmate for use in the treatment of shock.

Nitrile Rubber: Goodyear Tire & Rubber Co. (Akron) is out with a new nitrile rubber called Chemigum N 600. It's said to offer the better physical properties and process characteristics of low-temperature polymers while retaining the molding qualities of conventional polymers.

Uranium Isotope Samples: Ten standard uranium isotopic samples are now available from National Bureau of Standards. They include levels (weight percent of U-235) of 0.5, 1, 1.5, 2, 3, 5, 20, 85, 90 and 93. Prices vary from \$25-40/sample.

Pure U-238: U.S. Atomic Energy Commission is selling pure (99.97%) U-238 in three forms: uranium oxide, \$15.25/gm; 1/8-in.-diameter cast rod, \$16.50/gm.; and metal foil, \$16.75/-gm. AEC reports this form of uranium is not available from any commercial source. It may be ob-



Probing the Silver

Eastman Kodak researchers believe these pictures of a silver bromide grain (20,000 times normal size) supply the answer to this long-standing question: What happens when silver bromide is exposed to light?

The photo (above) shows how wandering electrons gather on the positive, lower-left side of the bromide grain and trigger the formation of

tained from Oak Ridge National Laboratory, Post Office Box X, Oak Ridge, Tenn.

Hydrogenation Catalyst: A new catalyst for purification of olefin streams by means of selective hydrogenation is available from Catalyst and Chemicals Inc. (Louisville). It's called C36 Selective Hydrogenation Catalyst, contains nickel, cobalt and chromium on an alumina support.

Alkyd Resin: Latest entry of General Electric Co. (Pittsfield, Mass.) is the alkyd resin Glyptal ZA-114. It's reportedly useful in baked enamel formulations requiring color and gloss retention in the 400 F range.

EXPANSION

• Metal & Thermit Corp. (New York) is emphasizing new-product development by reorganizing activities in this field. A new development department has been formed, will operate at the firm's Rahway, N.J., research center. Improvement of M&T's present



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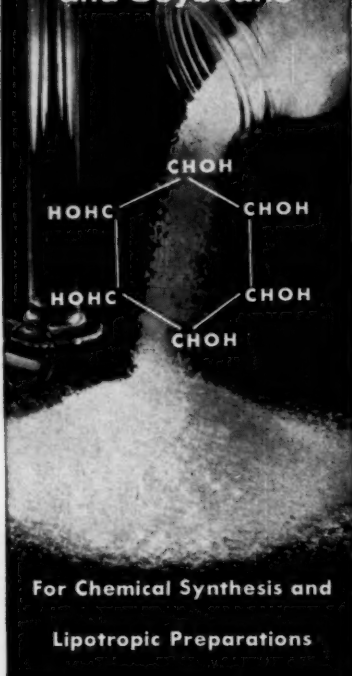
Bromide Mystery

black threads of metallic silver (*above*). The six-sided white area indicates the original shape of the crystal. The threads were formed when the silver bromide crystal grain had become fully developed.

To get these pictures, Kodak used a new technique subjecting the grain to the flashing of light and a 10,000-volts-per-centimeter electric field.

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RESEARCH

line of products, including electroplating products, organic coatings and products for the ceramic industry, will be stressed.

- A. H. Robins Co. (Richmond, Va.) is expanding its biological research program, will research several projects previously farmed out. Aim: new drug development.

- Chas. Pfizer & Co. (Brooklyn) has laid the cornerstone of its new medical and chemical laboratories at Groton, Conn. The lab, scheduled to be completed in the fall of '59, will house the company's biochemical, chemical, microbiological and clinical research units.

- Howe Sound Co. (New York) is moving its cobalt research program from its Salt Lake City research center to the Dover, N.J., laboratories of

Austen Corp. (New York), which it recently acquired. Haile Mines, with which Howe Sound merged earlier this year, also has research facilities, located at Henderson, Nev. The Salt Lake City center will be closed.

- Crane Co. (Chicago) has organized a subsidiary to handle government-sponsored research. The new firm, Corwith Corp., will initially specialize in nuclear reactor materials development.

- Eastman Kodak Co. (Rochester, N.Y.) has purchased 22 acres adjacent to its Kodak Park location in Rochester as the site of a research lab.

- Herty Foundation Laboratory (Savannah) has dedicated its third laboratory. The firm researches in the pulp and paper field.



Metal-Sputtered Printed Circuits

Bell Telephone Laboratories is using metal "sputtering," a century-old technique, in making precision-printed circuits. Bell's Harold Basseches (above, center) explains that "entire circuits, including resistors, capacitors and leads, may be laid down by this technique, in which ionized gas (e.g., argon) molecules bombard a cathode and dislodge atoms of metal, which then redeposit on nearby surfaces."

Even high-melting metals, such as tantalum and titanium, may be sputtered, are useful as resistors. Shown here with Basseches are researcher R. W. Berry (right) and P. L. McGeough. They've developed offbeat sputtering techniques, including the sputtering of metal alloys, as well as reactive sputtering, by which films of oxides, nitrides and sulfides may be plated out.



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Technology

Newsletter

CHEMICAL WEEK

October 18, 1958

Part of the push that hurled the Air Force's Pioneer more than 79,000 miles into space in last week's moon shot was likely supplied by double-base propellents. The propellant for Pioneer's third stage—officially described only as "solid fueled"—was made by Allegheny Ballistics Lab, supplier of double-base propellents for several missiles (e.g., Navy's Terrier and Talos, and the Air Force's Minuteman ICBM). Hercules operates ABL, is a staunch backer of double-base solid fuels (*CW*, May 17, p. 24).

Construction of a pilot radioactive-waste-calcining plant to treat high-level liquid wastes got under way last week at the National Reactor Testing Station in Idaho (*CW Technology Newsletter* July 19). AEC awarded the job to The Fluor Corp., Ltd., amended the company's basic contract to provide \$3,391,700 for construction of the new facility. Total cost of the project: an estimated \$6 million.

Heart of the calcining plant will be a cylindrical vessel in which the wastes will be calcined to oxides at 400-500 C in a fluidized bed of granular aluminum oxide. Operation is scheduled to start early in '60. The method is expected to be economically competitive with, and less hazardous than, storage of liquid wastes.

Rocky Mountain Research's new vanadium chloride process has been put up for licensing. The Denver firm originally planned to use the process itself but shelved the project when prospective customers suddenly lost interest in the new products. Stauffer Chemical is offering commercial quantities of vanadium oxytrichloride through its newly acquired Anderson Chemical Division. It can also supply research quantities of vanadium trichloride and tetrachloride.

Research and development expenditures this year will equal or exceed '57 totals for the majority of firms answering a new survey by National Industrial Conference Board. Of 140 firms replying, 59 will surpass and 50 will equal their '57 budgets. Other NICB survey findings: seven out of 10 companies follow formal review procedures to "consider and evaluate research proposals prior to their adoption." But more than half of the survey participants have no method of assessing the value of their research after its conclusion.

Is machine searching of metallurgical literature feasible? Yes, says the center for documentation and communications research at Western Reserve University (Cleveland). This conclusion comes three years after the start of a five-year program conducted by the university for American Society for Metals (Cleveland). Next step: gradual transition from experimental to routine machine searching while training and building a staff for an eventual ASM Metals Information Center.

Technology

Newsletter

(Continued)

A "slip-casting" method of producing intricate shapes from powdered molybdenum was disclosed by Sylvania Electric Products, Inc., last week at its newly dedicated laboratory and pilot-plant facilities in Towanda, Pa. Slip-casting is widely used in the ceramics industry, involves the dewatering of a slurry by capillary action in a plaster mold. Sylvania uses either a water or an alcohol slurry of micron-size molybdenum powder to make powdered metal parts that have 95% of theoretical density after sintering. Hollow objects and tubes are made by pouring the slurry out of the mold before all of the liquid has been drawn off by the plaster mold. Union Carbide's Electro Metallurgical Co. is slip-casting tungsten shapes.

A magnetic separation technique to recover ion-exchange resins from slurry is being developed jointly by Dow Chemical Co. and Utah Construction Co. (San Francisco). The trick is to incorporate sufficient magnetic material into the resin to permit "economically feasible" recovery of the beads by magnetic means.

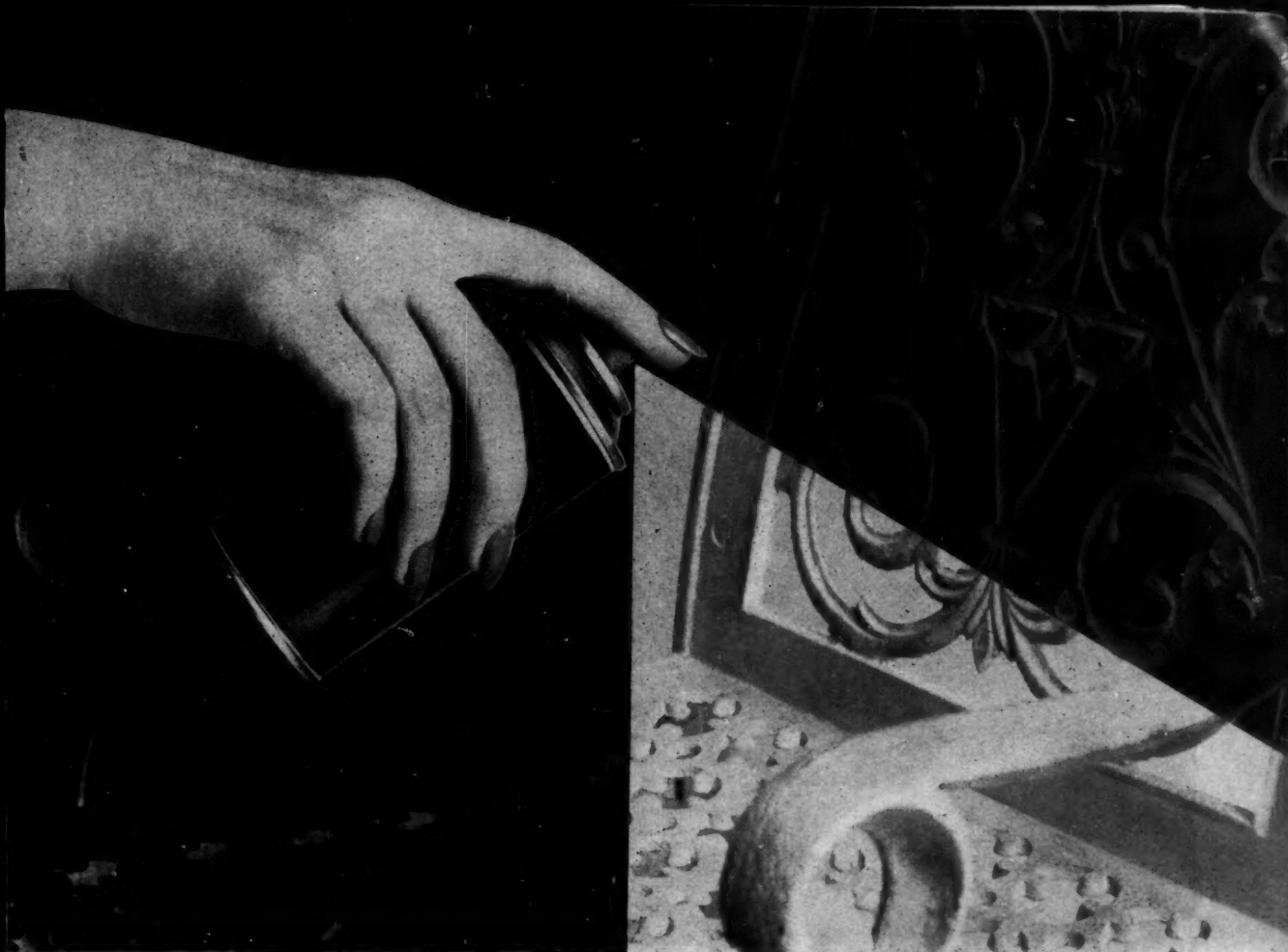
The project is still in the laboratory stage, says Utah Construction, will be scaled up in a pilot plant if further lab tests are as encouraging as early results. The company optimistically predicts several potential advantages of magnetic separation: it would eliminate need for thickening and clarifying solutions in ion-exchange units; it could be substituted for screening operations; it would reduce process water requirements, soluble losses and over-all capital costs.

Utah Construction hopes to perfect the magnetic separation method for use in its uranium-processing design and construction work; Dow's interest, of course, is in the potentially large market for the new resin in all types of ion-exchange processes.

A quick method of determining acetylene in air—accurate to 10 parts/billion—has been developed by National Bureau of Standards. Since acetylene is found in auto exhaust gases, the technique is useful for monitoring urban air pollution.

High-temperature metal processing by electron bombardment has another advocate (*CW, Feb. 1, p. 48*) in National Research Corp. Details of NRC's work are scheduled to be released next week by researchers E. S. Candidus and J. C. Simons, Jr., at the national symposium of the American Vacuum Society in San Francisco.

An ultrasensitive infrared detector that may open up new applications for infrared in industry was unveiled this week by Westinghouse Research Laboratories. Heart of the unit is a new photoconductor detector—germanium "doped" with gold—that responds to less than 5 hundred-billionths of a watt of heat radiation, about 10 times faster than any previously measured photoconductor detector.



This new packaging idea boosts sales to record \$65,000,000

In 1957 aerosol paints almost doubled their sales record set in 1956. Aerosols are filling consumers' needs for paint in small packages to the tune of \$65,000,000 a year and have also revolutionized sales for hair fixatives, colognes, insecticides and a host of other products.

The reasons for this success are simple. Aerosols deliver a product in a completely new form—a form that's easier to use and apply, with less mess and waste. These are the reasons housewives gave in a recent market survey for preferring the aerosol 2 to 1 over any other method of applying touch-up paints. If *your* product can be brushed, poured or sprayed, you stand a good chance to add new sales appeal—create a positive competitive advantage—if you package it in an aerosol.

It's not necessary to set up your own aerosol packaging line to enter this field. A custom filler near you has the specialized knowledge and equipment to help you. He can package your formulation for testing and help you from planning through production.

* * *

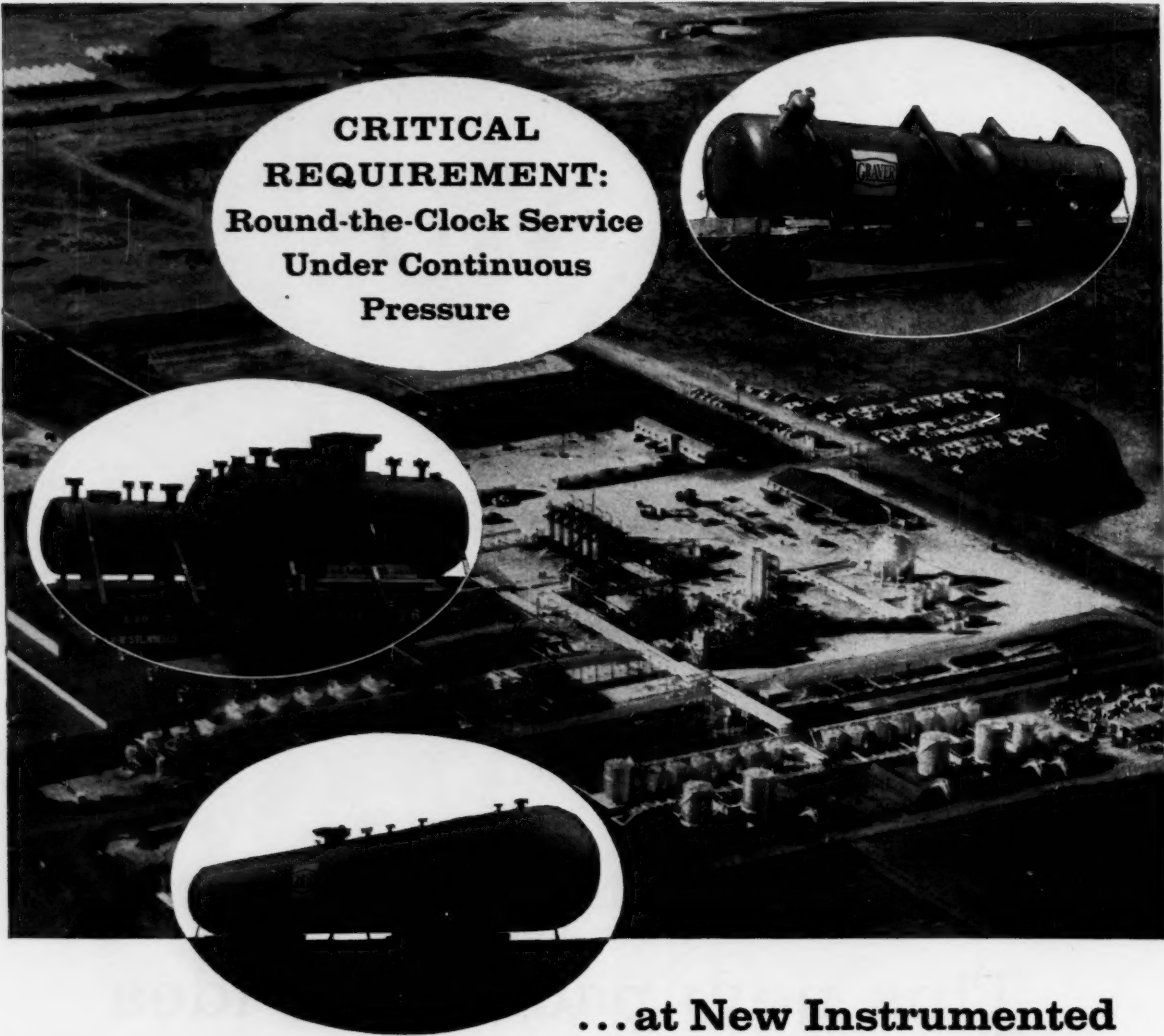
If you don't know the name of a custom filler, write Du Pont. We'll send you a list and include survey data on the market for aerosol paints, plus information about Freon* propellents for aerosols. More of today's successful aerosols are powered with "Freon" than with any other propellent. Write: E. I. du Pont de Nemours & Co. (Inc.), "Freon" Products Division 3310, Wilmington 98, Delaware.

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The nation's first privately financed and first completely integrated synthetic rubber operation owned jointly by The General Tire & Rubber Company and The El Paso Natural Gas Company at Odessa, Texas utilizes 880 instruments for absolute and continuous control by a single operator.

Just 22 months after the agreement was signed between The General Tire & Rubber Company and The El Paso Natural Gas Company, two new plants costing \$32,000,000 went on stream at Odessa, Texas to manufacture GR-S synthetic rubber. Now in full production day and night, a continuous stream of raw materials enters the General Tire plant at one end, leaving the other end as bales of synthetic rubber. The entire manufacturing process demands the utmost care in the control of timing, temperatures, pressures and the proportionate quantities of the various ingredients.

Eighteen pressure vessels fabricated by Graver of ASTM A-285 Grade C flange quality steel are important links in the modern automation chain at the General Tire plant. Built to be in operation around-the-clock under continuous pressure, the 18 pressure vessels are symbolic of the meticulous fabricating craftsmanship Graver applies to processing equipment for the petrochemical, chemical and petroleum industries. Over a century of experience qualifies Graver to tackle the most exacting specifications.

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PRODUCTION



CW PHOTO—HAAS ASSOC.

Standard of Cal's Hansen briefs annual maintenance conference on fourth day's activities.

Talking Their Way to Maintenance Savings

This week, Standard Oil Co. of California's top maintenance management men were back at their jobs, armed with new ideas to help cut the company's more than \$70-million yearly maintenance bill. Just back from a company-wide meeting, most of these high-level maintenance men were convinced that they had been a part of the most important cost-cutting idea of all—improved intracompany communications.

The convincer: the annual intracompany maintenance conference held at San Francisco. It's a four-day swap of ideas and information on a variety of maintenance subjects by 90 representatives of 12 Standard of California's domestic and foreign operating companies.

From formal talks, panel round tables and casual group discussions,

the company expects big payoffs. "A maintenance savings idea developed in one of our operating companies can result in a dozen-fold saving throughout the company when discussed at the meeting," said one of the firm's officials.

Counting Blessings: Clarence Hansen, chairman of Standard's Board of Engineers, and Malcolm Miller, the board's secretary, list six major benefits of the conference:

(1) Faster, more economical way of communicating. Anyone who has developed a special technique or new solution of a problem gets the opportunity to speed it along to others.

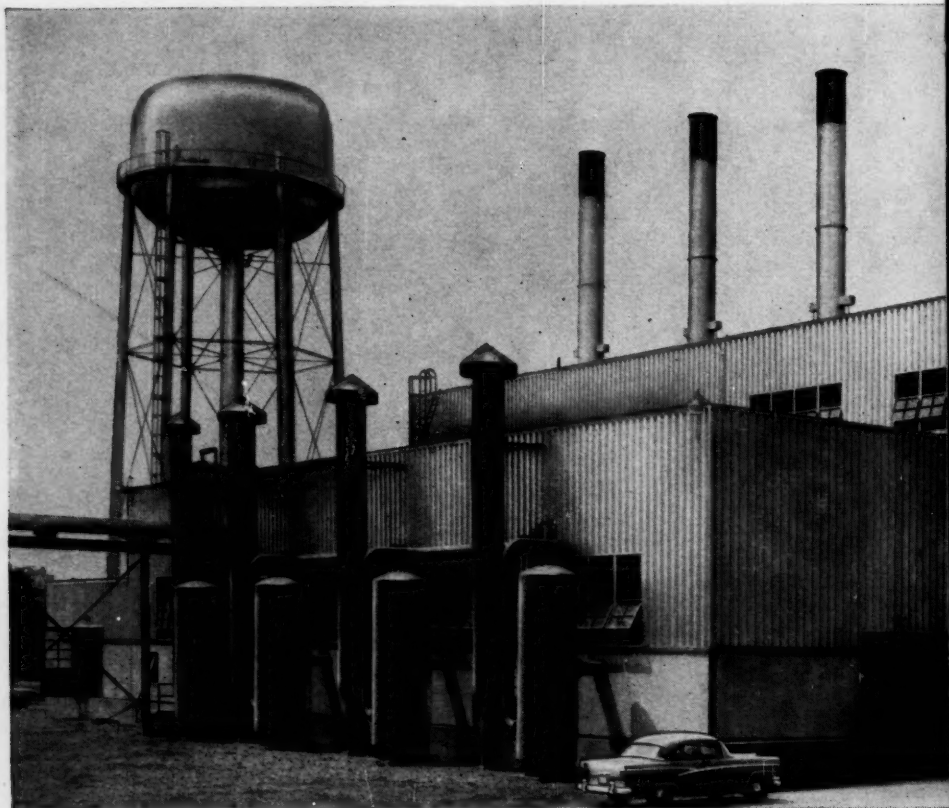
(2) Provides an opportunity to present ideas that might otherwise never get into the regular channels of communication. For example, many of the conferees prefaced their contri-

butions with, "Probably everyone knows this, but I'll toss it out anyway." Frequently such contributions would turn out to be the exact answer to another's problem, said Miller.

(3) Helps avoid duplication of effort within the company. By airing their problems and their efforts to solve them, the engineers have an opportunity to hear what others are doing, perhaps on the same problem.

(4) Helps future interchanges of information. The men at different locations get better acquainted; and, because they've met personally, they are more likely to pick up the phone, ask for advice from a colleague at another plant.

(5) Inspirational value is great. By bringing in the board chairman, president, other top executives to address the maintenance group, the company



experience ... KEY TO DRAVO'S

One of the most important economies that results from handling power plant construction on a "turn-key" basis is the saving of time.

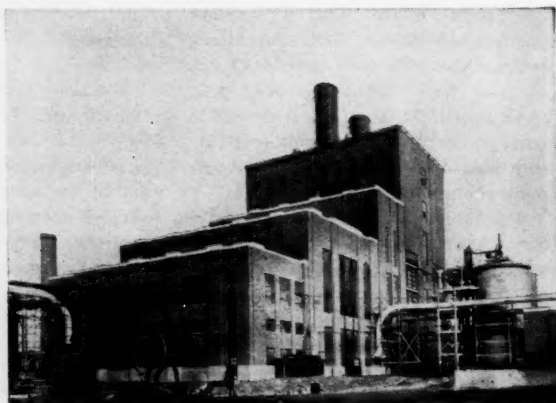
Executive time, for instance, is not diverted to dealing with inevitable problems that accompany a building project, or in gaining specialized skills required. Further, with engineering and construction

completely integrated, the project can proceed more rapidly to meet the agreed-upon schedule and contract price.

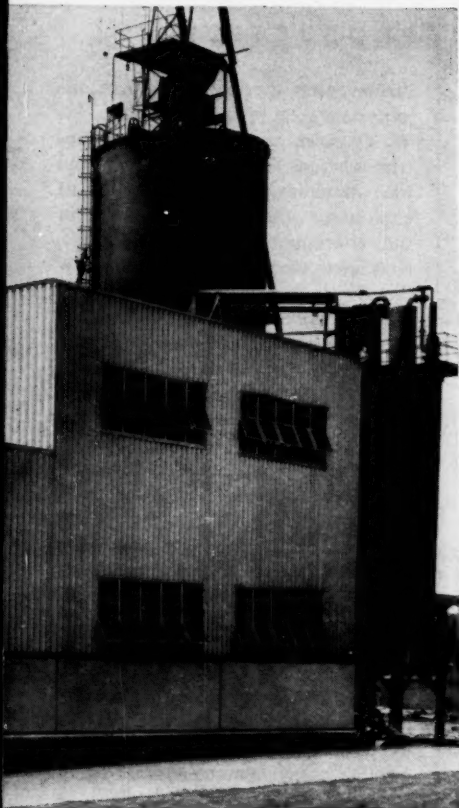
Working to design requirements specified by the customer, Dravo handles construction-engineering, procurement of equipment and erection of the complete power plant. With this type of single



Electric power and high pressure steam for mill supply in a steel company are produced by this Dravo-built power plant.

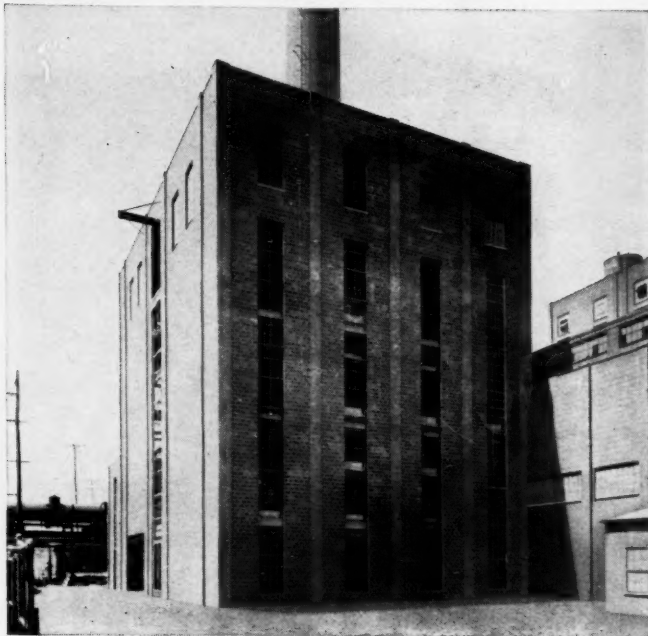


This Dravo-built boiler plant furnishes electric power and high pressure steam used in refinery process work.



◀ Steam and compressed air for a large automobile parts factory are supplied by this Dravo-designed and constructed boiler plant, one of five such "turn-key" projects for the same company.

Steam power for a chemical processing plant is supplied by this Dravo-designed and erected boiler plant.

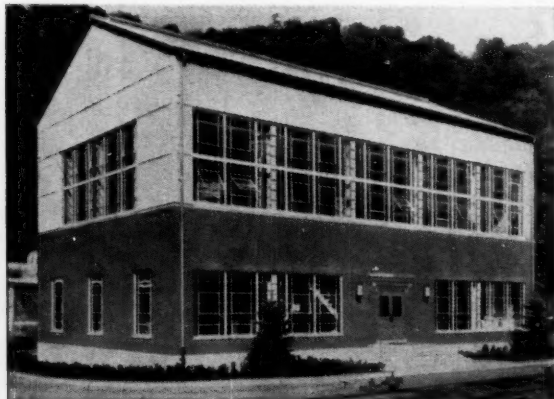


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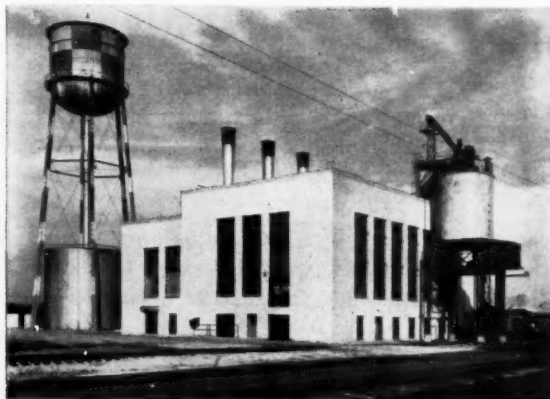
responsibility contract, the customer is relieved of all details, and is assured of the kind of performance that only experienced personnel can produce.

Your next power plant project may benefit from the type of teamwork that Dravo experience makes possible. For information, write DRAVO CORPORATION, PITTSBURGH 22, PA.

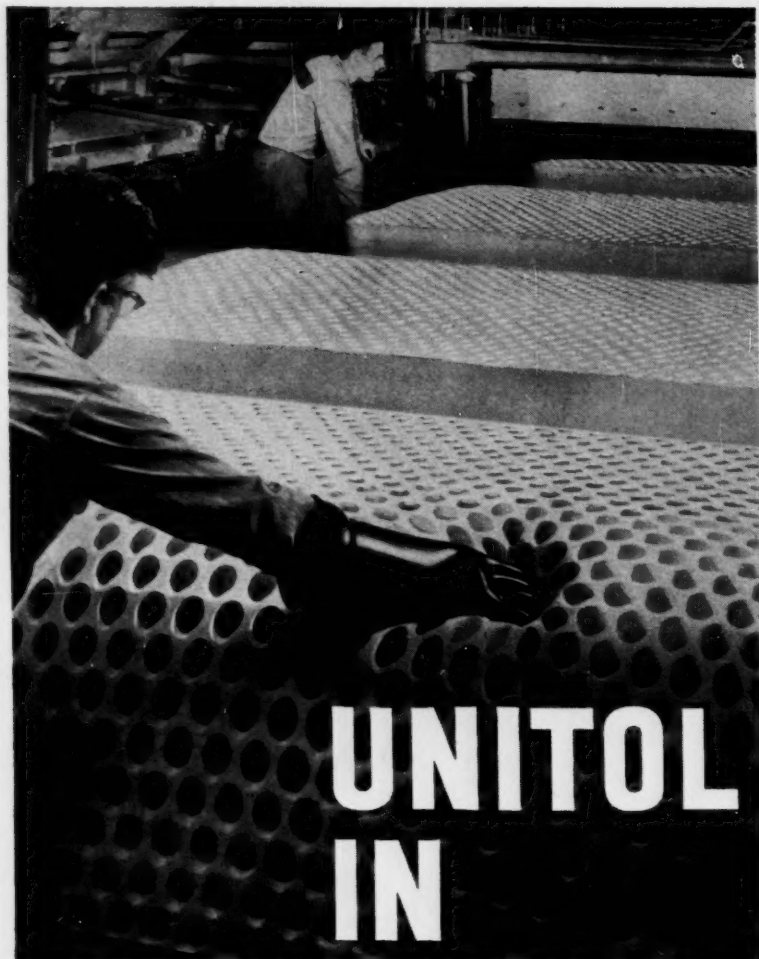
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Dravo designed and constructed this electric generating plant as part of a three year expansion program for a gas company.



Compressed air and steam for heating and process work are supplied for an automobile plant by these boiler facilities.



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PRODUCTION

demonstrates that it is aware of the importance of maintenance (e.g., W. W. Davison, vice-president of industrial relations and engineering, opened the conference and R. G. Follis, board chairman, addressed the group in the afternoon of the second day). And it lets the maintenance man know that he is on a par with those in other divisions of the company. It gives him importance and dignity, says Hansen.

(6) Puts the engineering department in a better position to design plants and equipment for simpler maintenance. Since members of the engineering department attend the meetings, they have an opportunity to find out what is bothering the maintenance men, pick up design pointers.

And, the problem of improving design-maintenance communications is one of the toughest Standard of California—with its many operating locations—has to face. It's also tackling this problem on a small scale by circulating engineering specialists throughout the maintenance divisions to gather ideas, take them back to engineering for action. Standard hopes to expand this practice in the future.

Getting Started: This year's conference was the fourth. The idea has been spearheaded by Hansen since '54 when he became chairman of the Board of Engineers, an advisory body to the vice-president of industrial relations and engineering. The board,

Small groups discuss specialized topics



composed of 19 members who represent the complete range of company operations from production and manufacturing to transportation and marketing, is charged with developing and recommending general engineering policies.

Hansen had previously served in eight of Standard's operating companies, recognized the savings to be gained through better exchange of ideas and avoidance of duplication of effort among the various companies.

A total of 44 maintenance men, including one from Holland, and 46 specialists from other departments (e.g., engineering, labor relations, research), participated in this year's sessions. One of the biggest problems was selecting subjects for the program. Because of the diversity of interests among the men, it was hard to strike a happy balance.

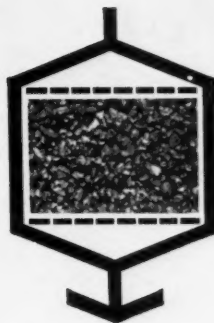
Hansen, Miller and Joseph Deane, vice-president of the Oronite Chemical Co. subsidiary and chairman of the Board of Engineers' subcommittee on maintenance, organized the program. The first two days of the conference were devoted to speeches by specialists, included topics such as labor relations; the maintenance force's responsibility in plant security; the spare-parts program of corporation purchasing; implementing a spare-parts program; new maintenance tools, equipment and techniques; the prospects of plastic coatings; expe-

topics of mutual interest.



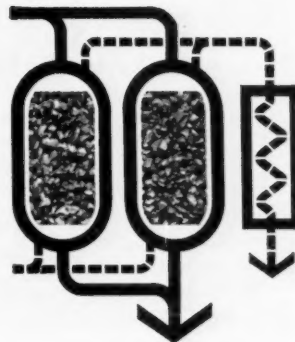
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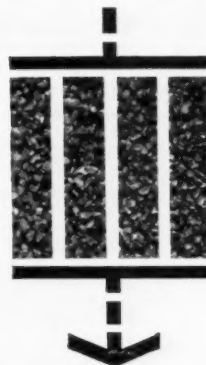
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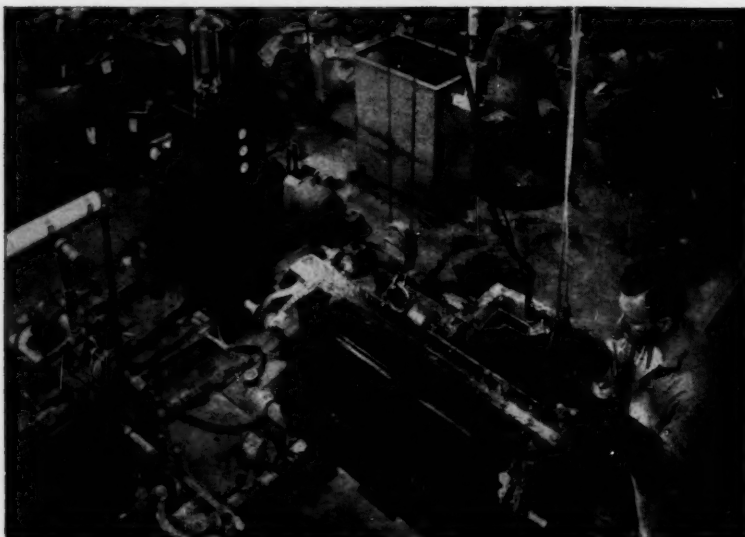
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Write for Literature Group J-46.

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Cyanide waste treatment system in plating room of the Palnut Co., Mountainside, N. J.

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PRODUCTION

riences with plastics in tank and other repairs; and the productivity of maintenance workers.

In the third day's panel discussion, safety and specialty products were covered. And a lively panel discussion ensued on how to capitalize on past maintenance experience in future designs. This discussion was aimed at improving the interchange of information between operators, maintenance engineers and designers.

How Much Time? One programing difficulty in past years was deciding how much time to allot to group discussion of special problems—those so specialized they would interest some conferees, not others.

Hansen feels this situation was eased by adding a fourth day, devoted just to small group discussions, to the meeting. Men with similar interests thus were able to discuss common problems in the morning (e.g., Robert Ridgway, engineer in the Western Operations' producing department, led a group discussion on the maintenance of mechanical equipment), reconvene in the afternoon for a general session, at which leaders of the various discussion groups gave highlights of their morning sessions to all the conferees.

Gaining Favor: Other companies realize the value of meetings similar to Standard of California's.

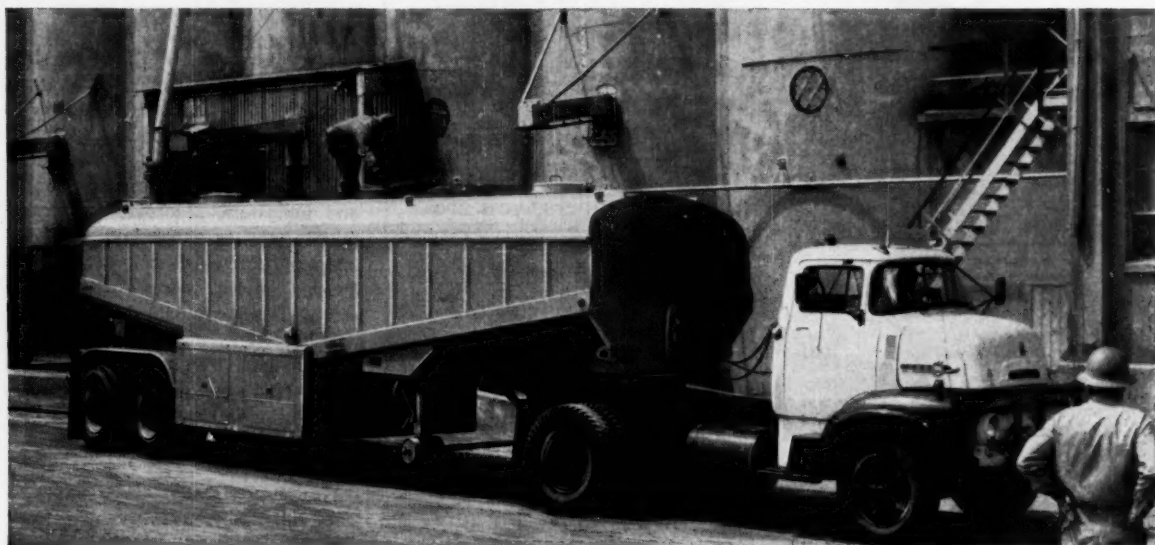
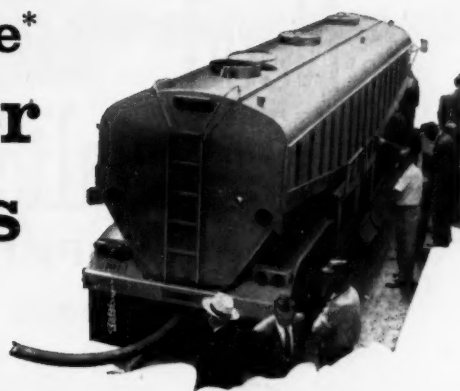
Canadian Industries Ltd., for example, holds a yearly maintenance conference that brings together groups from its 19 plants. A feature topic at this year's meeting, held in Toronto in April, was a job-planning program that had halved maintenance time on jobs at about half of its plants (*CW*, Feb. 15, p. 51).

Du Pont takes a slightly different tack, holds annual two-day meetings for plants in various areas of the country, rather than trying to include representatives from its more than 70 plants in one company-wide meeting. And in the Wilmington area, the company holds three or four evening meetings each year for maintenance men.

Just how big a dollar-savings tag can be placed on these conferences even the companies involved find it difficult to say. But one Standard of California official sums up: "A savings of even a small percentage of our total maintenance costs through improved communications can be a big thing."

New Fruehauf Air-Slide* Pump Trailer For Bulk Chemicals

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EQUIPMENT

Vertical Slurry Pump: A new vertical heavy-duty slurry pump for submerged wet-pit sump service is offered by Morris Machine Works (Baldwinsville, N. Y.). The unit, called Type RXV, is designed for low-speed continuous pumping of fine and heavy slurries of sand, coal, crystals, chemical sludges and abrasive plant drainage. Nine sizes, from 2 to 8 in., are offered; all feature quick dismantling—four bolts fasten the liquid end. Wearing parts are interchangeable with Type RX horizontal pumps.

Instrument Valve: Manning, Maxwell & Moore, Inc., has added Type 5560-S, a stop and bleed-off valve, to its 5500 line of Hancock forged-steel valves. The valve may be used as a stop valve between pressure source and indicators, recorders and transmitters, and as a bleed-off valve for sampling, bleed-off of vent-pressure trapped in the system, or upon removal of an instrument. Valve is angle type, has 3/4-in. male NPT inlet, 1/4-in. female NPT union outlet and 1/4-in. NPT bleed-off valve connection. Rating: 600 psi. at 910 F; 2,000 psi. at 100 F.

Heat Protection: A new Thermalair respirator designed to provide protection from excessive heat is available from American Optical Co. (Southbridge, Mass.). The unit is part of the firm's line of heat-reflective clothing; it also may be substituted for airline hose and mask, or self-contained breathing apparatus in many cases. Unit weighs 6 oz., has low breathing resistance (0.2 in. of water at 85 liters/minute of air flow).

Input Controller: The Automatic Timing & Controls Corp. (King of Prussia, Pa.) now offers its Type J-4A input controller in an explosionproof cast-aluminum housing. The controller provides stepless kwh. control, may be used to replace rheostats in regulation of electrically heated ovens, furnaces, dryers, evaporators, dehumidifiers.

Magnesium Bridges: Movable bridges for connecting plant and warehouse buildings, spanning railroad tracks, etc., are now available in magnesium from Magline Inc. (1900 Mercer St., Pinconning, Mich.). The light-

BULLETIN!

POWELL introduces new member in world's largest family of valves

Powell engineered "Full Flow" bronze valves are now available in a full line: the brand-new 150-pound screwed end Globe Valve, in addition to the well-known 200-300 pound Screwed and the 150-300 pound Flanged Globe and Angle Valves.

Although designed by Powell to assure maximum flow with minimum pressure

drop and internal turbulence, these valves can be throttled to permit only the minutest amount of fluid to pass through. And, if desired, they can be supplied with Indicator Collar, Arm and V-port Disc for quickly determining flow and holding it constant.

Compare these advantages of Powell Full Flow valves:

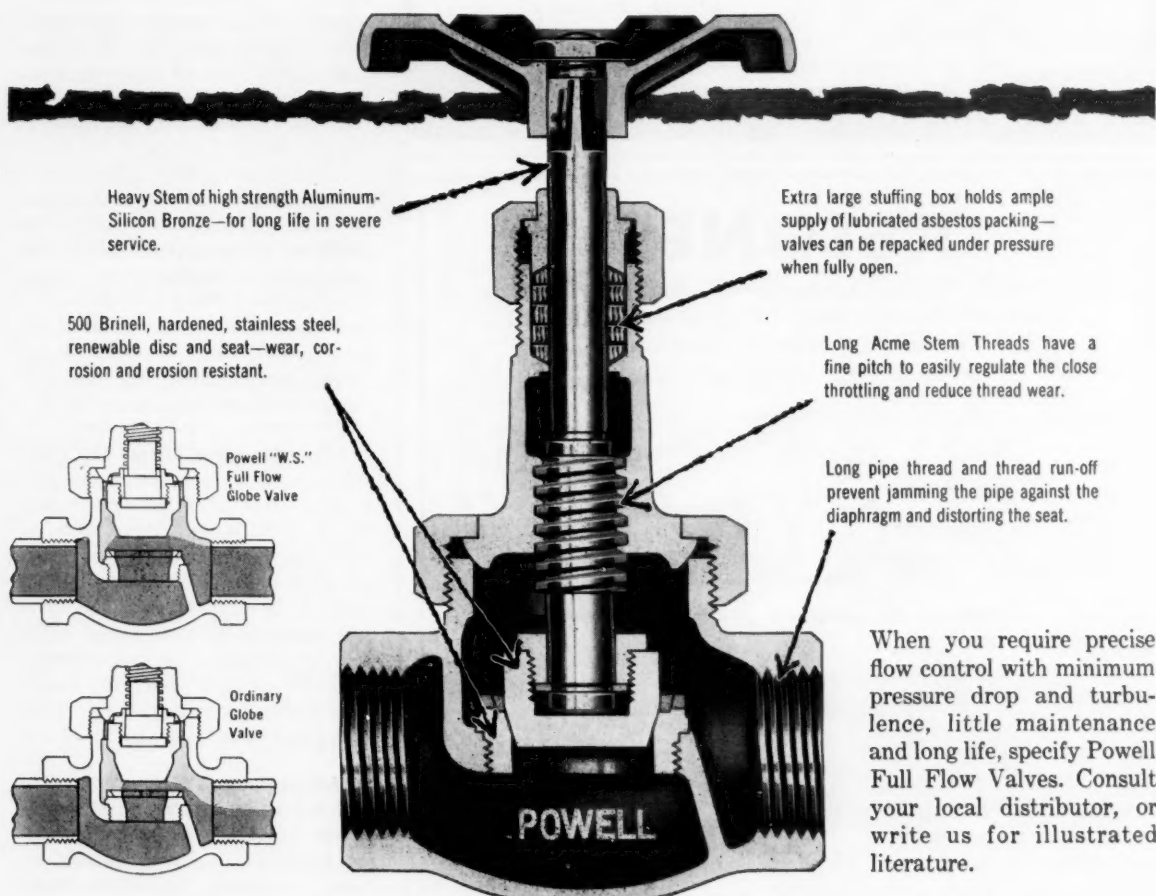



Fig. 2600 (Sectional)—150-pound "W.S." Full Flow Globe Valve, Screwed Ends

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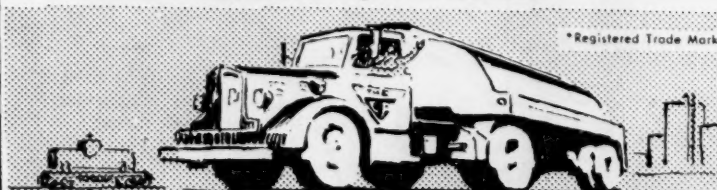
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PRODUCTION

weight bridges come in 10- to 24-ft. lengths, 58- to 70-in. widths, do not require power or counterbalances for operation. Load capacities: 7,000 to 16,000 lbs.

Thermo-Drive Valve Positioner: Swartwout Co.'s (18511 Euclid Ave., Cleveland 12) new Thermo-Drive Actuator valve positioner is operated by a closed Freon system. The actuator develops a force of 500 lbs., opposed by 300-lb. return-spring force. Total stroke length is 1.5 in.; speed of response is 0.1 in./second. Position repeatability to 0.5% is claimed.

Digital Voltmeter: Beckman Instrument's System Division (325 North Muller Ave., Anaheim, Calif.) is out with an all-electronic transistorized digital voltmeter. The unit was developed for automatic measurement, display and recording of voltages in digital form, is suggested for telemetry, alarm monitoring, production testing and research measurements. The voltmeter gives reading in the converter, repeats the operation 15 times/second.

Pneumatic Temperature Controls: An indicating pneumatic temperature controller for air-operated devices has been added to Partlow Corp.'s (New Hartford, N. Y.) new line of temperature controls. The instrument is explosionproof, has a mercury-thermal element sensing device. The unit operates on 3-15-psi. air.

Adjustable-Speed Drive: The Louis Allis Co. (427 East Stewart St., Milwaukee 1) now offers its new Allispede Drive, a mechanical drive with infinite speed adjustments over ranges up to 8:1 and with output speeds from 1 to 10,000 rpm. The drive components may be rearranged in the field for vertical or horizontal mounting, with the location of the output shaft and motor in any of four positions. Units are rated for 1-20 hp.

Thermocouple Wire: Serv - Rite sheathed thermocouple wire with magnesium, aluminum and zirconium oxide insulation is a new offering by Claud S. Gordon Co. (3000 South Wallace St., Chicago 16). The 0.20-0.50-in.-diameter wire is available in several calibration ranges and sheath materials.

U.S.I. CHEMICAL NEWS

Oct. 18

★

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★

1958

Coppedge Named President of National Distillers

Bierwirth Elected Chairman

John E. Bierwirth, president of National Distillers and Chemical Corporation since 1949, has been elected chairman of the board, and Roy F. Coppedge, Jr., 43, an executive vice-president since May, 1957, has been elected president. The office of chairman has been vacant since 1953.

In their new posts, Mr. Bierwirth and Mr. Coppedge will guide company policy and direct operations. The move was made to provide a broader executive base for the company's growing, diversified business. Net sales in 1957 were \$539 million as against \$470 million in 1952. Industrial chemicals, petrochemicals and special metals currently account for more than 40% of total operating profits. Total investments in these areas now exceed \$190 million.



John E. Bierwirth



Roy F. Coppedge, Jr.

Unique Brake Throttles Flow of Sodium Coolant

Engineers working on the Sodium Reactor Experiment (SRE) at Santa Susana, Cal. have brought a unique solution to the problem of reducing flow of liquid sodium coolant while minimizing thermal stresses on the sodium piping and heat exchanger systems. Flow reduction is sometimes necessary to control rate of temperature change in the reactor core.

Two eddy current brakes — one on the secondary, nonradioactive sodium loop, and the other on the outlet side of the primary loop — straddle the coolant pipes and throttle sodium flow from 1,200 gpm to 12 gpm in two seconds. Thermal stresses on the system are kept well below any damaging level using this braking method.

Attention: Users of Tax-Free Alcohol

The Revenue Ruling covering storage of tax-free alcohol has been expanded for purposes of clarification. The regulation previously stated only that a storeroom which can be securely locked must be provided, of sufficient capacity and substantial construction.

The expanded ruling—No. 58-207—adds that these storerooms may also be used for other supplies, provided they are separated from the alcohol, and provided their presence does not interfere with the proper accounting and safety of the alcohol.

Automation Takes Over Communications at U.S.I.; Speeds Chemicals to Customers

Unique New Teletype System for Communications and Electronic Data Processing Links 40 Locations Via 7,500 Miles of Wire. Sales and Plant Personnel Freed of Paper Work.

Taking a cue from the automatic operations of its many chemical and petrochemical plants, U.S.I. has recently extended automation to the clerical side of

Ion Exchange Resins Act As Catalysts in Acetone Cyanohydrin Production

Acetone cyanohydrin can now be made experimentally by reacting acetone with hydrogen cyanide in the presence of anionic ion-exchange resins. These resins perform effectively as heterogeneous catalysts for the reaction, research workers have discovered.

However, a way must be found to prolong their process life before the transition to a successful commercial operation can be made. A two-stage continuous flow reactor has already been developed in anticipation of a rapid solution to the problem. It employs a feed of acetone and hydrogen cyanide in the mole ratio of 5:1. At 25°C, 99% conversion is achieved. This feed ratio is required to prevent swelling of the resin, moderate the evolution of heat, and displace the equilibrium in favor of acetone cyanohydrin.

The principal use of acetone cyanohydrin is for the preparation of alpha-methacrylic acid and its esters which are polymerized to form methacrylate resins.

Phosphoric Acid Shows Promise as Soil Stabilizer

Recent studies have revealed that 1-10% by weight of phosphoric acid stabilizes the fine-grained soils which must frequently be used as foundations for roads, dams and airstrips, and improves the ability of these soils to bear loads. Until these studies were made, no really satisfactory means had been found for solidifying fine-grained soils, which have strength when dry but not when wet.

Phosphoric acid seems to act by forming an insoluble phosphate glass from particles of alumina and silica in the soil. It can be employed in low concentrations, costs little, works fairly rapidly. Soils cured for a few hours under humid conditions achieve high strengths after several days, and very high strengths after a few weeks.

Depending on the initial water content of the soil being treated, it may be necessary to add small amounts of other materials such as fluosilicates for faster cure and maximum wet strength of the stabilized soil.

its business with a tailor-made teletype and data processing system designed primarily to accelerate delivery of chemicals to U.S.I. customers. Specifically, it does these jobs:

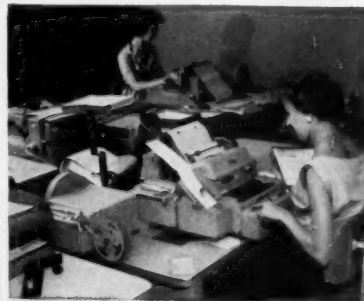
- Completes order processing and invoicing with a single typing.
- Is instrumental in production scheduling.
- Compiles sales, order and production statistics.
- Provides statistics for budget and inventory control.
- Handles administrative messages.

U.S.I.'s new teletype setup interconnects 40 plants, shipping points, sales offices and company headquarters in a 7,500-mile network among 27 cities. It is integrated with standard punched-tape coding and programming equipment, that allows immediate reproduction of an original message anywhere along the line. It also acts as an integral part of an electronic data processing operation which makes information currently and simultaneously available to management, sales, production, research, credit, traffic, accounting.

One Typing Completes Order Handling

Here's how it works. Say an order for ethanol is placed in Chicago. An order form is made up at the sales office. In this operation a tape is produced which transmits complete information to the shipping point at Tuscola via teletype. Here the tape automatically produces combination shipping papers and the invoice. At the same time, the information in condensed form is sent to New York and converted to punched cards for data processing.

MORE →



Girls at a U.S.I. sales office producing transmittal tapes for orders. Most information is transferred automatically to the tapes from repetitive data tapes and cards.

Oct. 18

★

U.S.I. CHEMICAL NEWS

★

1958

CONTINUED

Automation

This new automation is proving invaluable to company and customers alike. When a customer needs some special product or rush service, the U.S.I. salesman, relieved of detail by the automated communications system, is free to set an all-out effort in motion to deliver what the customer needs when it's needed.



Switching center at Cincinnati. Here order and message tapes are received from sales offices for redirection to New York headquarters and shipping points throughout the country.

Esters of Alkyl Aryl Phosphoric Acid Cut Static on Polyethylene

Polyethylene articles with a greatly reduced tendency to accumulate electrostatic charges can be made by incorporating certain esters of alkyl aryl phosphoric acid, according to the claims in a recent British patent. In addition, on polyethylene film and sheeting, these esters are said to reduce static without increasing slip or wettability, as do certain nonionic surfactants used for the purpose. They do not affect the flexibility, water and chemical resistance, strength or heat-sealability of the resin in any way, it is asserted.

The ester is uniformly distributed on the surface of the polyethylene in one of two ways. It may be thinly coated onto the surface of the finished article from solution in a volatile solvent, in the amount of 5 to 100 mg./sq.

yd. of surface; or it may be incorporated into the granular resin by milling before fabrication, in the amount of 0.05 to 0.25% by weight.

The resulting articles exhibit little or no static, even after prolonged application of friction, according to the patent, and can be surface-treated by usual methods for better bonding with printing inks.

"Atoms-for-Peace" Show Great Success at Geneva

Mallory-Sharon Among Exhibitors

The U.S. Atomic Energy Commission and 50 U.S. industrial firms participated in the commercial exhibition held September 1-14 at the Palais Des Expositions, Geneva, Switzerland in conjunction with the second United Nations International Atoms for Peace Conference.

Focal point of the American section of the exhibition was a full-scale model of the core of a 150,000 KW atomic power plant. A rotunda surrounding the model contained an information center and displays telling the overall story of the U.S. atomic industry. On either side of the rotunda were the exhibits of the 50 participating U.S. companies.

Objectives of the American exhibition were twofold: First, to demonstrate that U.S. industry and government are working co-operatively in the field of atomic energy. Second, to show that in the U.S. atomic energy is a practical reality.

Highlights of the American section were two "live" atomic reactors of the research and training type; a completely equipped, mobile radioisotope laboratory; the showing of atomic energy films; a display of U.S. technical publications; and a new "master slave" robot.

Mallory-Sharon Metals Corporation, Niles, Ohio — world's largest integrated producer of reactive metals — was one of the principal exhibitors at the show. The company, owned one-third by U.S.I.'s parent company National Distillers and Chemical Corp., devoted its display to zirconium for structural and cladding purposes in thermal reactors and to hafnium for control rods.

TECHNICAL DEVELOPMENTS

Information about manufacturers of these items may be obtained by writing U.S.I.

Ethanol as a nutrient for cattle, dairy animals and sheep is discussed in a 4-page reprint now available. The alcohol is reported to accelerate rumen microflora metabolism, increasing protein synthesis and cellulose digestion. **No. 1400**

Diethylene glycol dimethyl ether described in new technical bulletin as anhydrous reaction medium for organometallic reactions, solvent for inorganic salts, and for use in synthesis of organoboranes and boron-nitrogen polymers. **No. 1401**

Technical reports made on polyethylene from 1929 to 1957, and now available from the Office of Technical Services of the Dept. of Commerce, are all listed in a 4-page catalog available from Govt. Printing Office for 10¢. **No. 1402**

Copper complex fungicide now offered in pilot plant quantities may also serve as rodenticide. Field tests indicate effectiveness on wide variety of harmful organisms in concentrations between 0.005 and 0.05 per cent. **No. 1403**

Corrosion-resistant metallic filters for fuels and other compounds such as hydrogen peroxide, hydrazine, ethylene oxide and liquid oxygen can now be obtained. Wide range of flow rates and mesh sizes available. **No. 1404**

C¹⁴ Labeled isooctane (2,2,4-trimethylpentane-2,4-C¹⁴) is now available for hydrocarbon and petroleum research on combustion, and for kinetic and mechanical studies. Specific activities to 5 milluries/millimole can be made. **No. 1405**

New all-polyethylene acid pump now on the market attaches to any 5-pint reagent bottle. Consists of pump body with relief valve, siphon, spout and 4-ounce squeeze bottle. Claimed to deliver 1,000 milliliters per minute. **No. 1406**

Ion exchange resins are discussed in recently up-dated book which can now be purchased. In 466 pages, the book provides detailed information on the nature and preparation of all types of ion exchange resinous materials. **No. 1407**

New silicone rubber compound, reported to be toughest 25 durometer material now available, is suggested for molded and extruded seals, low pressure gaskets, cushions, other parts. Offers tensile strengths up to 1,000 psi. **No. 1408**

New optical goniometer identifies crystalline substances by simple external measurements of interfacial angles. Catches reflections from various faces in telescope moved around crystal. Claimed accurate, easy to operate. **No. 1409**

PRODUCTS OF U.S.I.

Alcohols: Ethyl (pure and all denatured formulas); Proprietary Denatured Alcohol Solvents SOLOX®, FILMEX®, ANSOL® M, ANSOL PR.

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Pharmaceutical Products: DL-Methionine, N-Acetyl-DL-Methionine, Urethan USP, Riboflavin USP, Intermediates.

Heavy Chemicals: Anhydrous Ammonia, Ammonium Nitrate, Nitric Acid, Nitrogen Fertilizer Solutions, Phosphatic Fertilizer Solution, Sulfuric Acid, Caustic Soda, Chlorine, Metallic Sodium, Sodium Peroxide, Sodium Sulfite, Sodium Sulfate.

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Market Newsletter

CHEMICAL WEEK
October 18, 1958

The automotive industry last week dropped a block-buster in the laps of steel producers, gave aluminum makers' morale a big boost. Researchers Robert Thomson and Darl Caris of General Motors warned the Gray Iron Founders' Society that aluminum is now cost-competitive with iron, bringing aluminum engine blocks closer to reality (*see also p. 110*).

Such blocks have been undergoing tests for some time, and results have ranged from good to bad. But it's very clear to iron producers that the automotive industry's preference for lighter cars will lead it rapidly toward more extensive use of lighter metals—aluminum in particular. Furthermore, lighter engines mean that structural elements of cars won't have to be as strong, paving the way for more applications of aluminum.

The advent of aluminum engine blocks probably would herald a new competitive era for the steel industry—something it hasn't had to contend with in the past. Although admittedly this competitive situation is still around the development corner, the steel industry already is getting a taste of the aggressive marketing that's behind the fast-growing aluminum business.

For example, the traditional tin can market is already feeling the impact of aluminum cans (*CW, August 23, p. 47*). But it apparently takes a lot to unsettle steel and its consuming industries, as was evidenced by recent price increases on tin cans—partly because of increased labor costs, but largely because of tin plate price increases recently announced by steel companies.

Another worry for the steel industry is possible future construction of auto bodies from reinforced plastics. News from Europe indicates that foreign producers—who are seeking bigger car markets in the U.S.—are exploring possibilities of plastic bodies. One of the main attractions at the Moscow Industrial Fair is a 220-horsepower (top speed: 150 miles/hour) sports car with a glass fiber-reinforced plastic body.

•
Benzene sales are picking up slightly, particularly sales to styrene and phenol makers. But for aromatics marketers generally, happy days aren't here yet. Conditions of sharp competition, overloaded U.S. capacity and the current low tag of 31¢/gal. still cause plenty of trouble.

Another market depressant: continuing imports of Red-produced benzene. The increasing flood of low-cost Russian material pouring into the U.S. earlier this year was one big reason for the 5¢/gal. slash in prices last July (*CW Market Newsletter, July 19*). Last week, an additional 5 million gal. of industrial material from Russia reportedly arrived at Houston, Tex., at prices said to be at least a nickel under U.S. schedules.

Despite the growing similarity to market conditions prevalent last spring and summer, there seems to be slight chance that U.S. prices

Market Newsletter

(Continued)

will be pressured any lower than they are now. Why? Producers are again veering to the conclusion that cutting prices does little as a sales hypo.

New advances in nonferrous metal prices for the second time in two weeks again boosts copper, lead and zinc tags ½¢/lb. Domestic custom smelters initiated the latest rises, as they did previously (*CW Market Newsletter*, Oct. 11).

At the weekend, lead was pegged at 12¢/lb. (New York), zinc at 11¢ (East St. Louis), and copper at 27½¢/lb.

Primary copper producers had maintained since mid-July a price of 27¢/lb. The new custom-smelters' price, however, has triggered a ½¢/lb. increase by producers—resulting in a copper price of 27½¢/lb.

Look for a drop in worldwide demand for copra and coconut oil—and a probable retreat next year from today's high prices. That was the forecast by a 15-nation group of commodity specialists meeting in Tokyo last week under auspices of the United Nations Food and Agricultural Organization.

The experts, noting that supply and demand for copra often runs counter to other fats and oils, also predicted an early (though temporary) halt in output expansion. Reason: drought in some major producing areas, political troubles in others, and the removal of the U.S. processing tax. But, say the trade specialists, "good rains and a return to political stability in Indonesia next year should bring a resumption of the output rise."

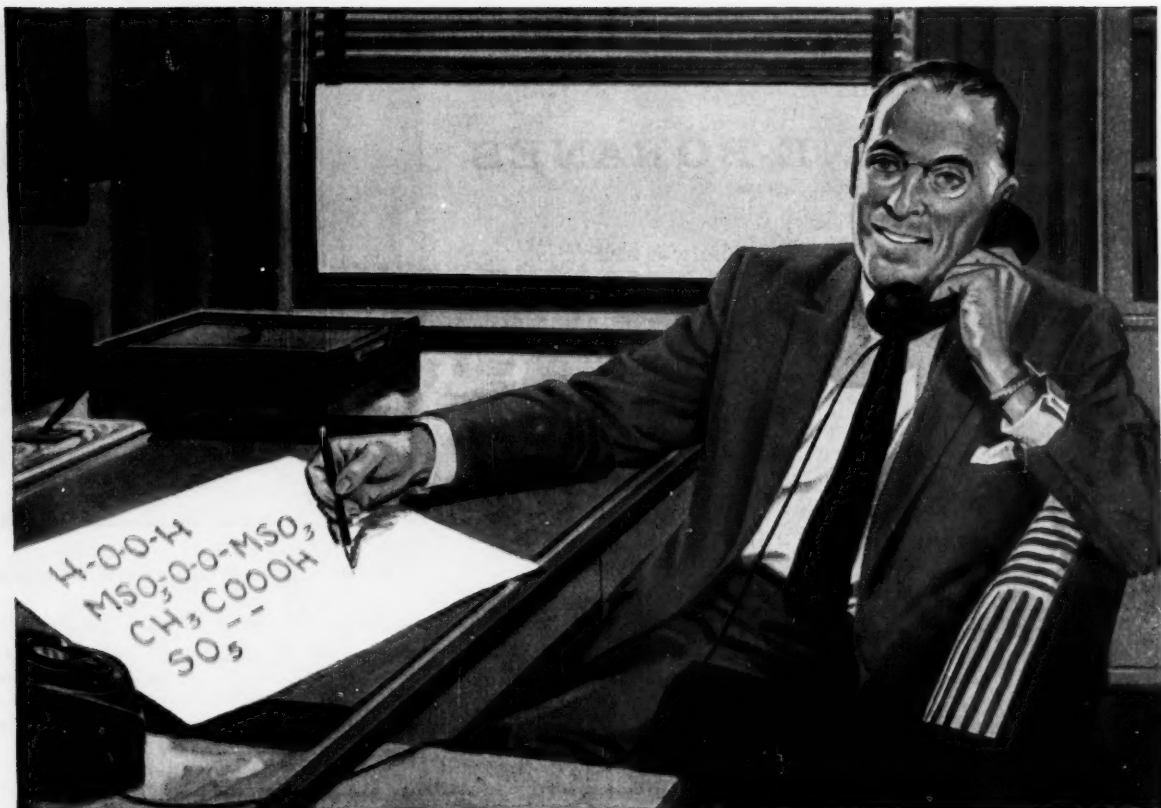
In this country, diatomaceous earth capacity was hiked last week by initial production of Eagle-Picher's new processing plant near Lovelock Nev. The installation, built by Kaiser Engineers, is designed to turn out some 36,000 tons/year of natural and calcined diatomaceous earth products. It's the second such Eagle-Picher plant in Nevada.

The new facility is designed to permit further expansion, when required, by the addition of duplicate units "without the disruption of existing facilities," says the company.

SELECTED PRICE CHANGES — WEEK ENDING OCTOBER 13, 1958

	Change	New Price
UP		
Lead, metal, prime, pigs, N.Y.	\$0.005	\$0.125
Stanic oxide, dms., dlvd.	0.015	1.045
Tankage, Chicago, animal, feeding, 9-11% ammonia, bulk, ton	0.25	8.00
Tin metal (Straits)	0.00375	0.95875
Zinc metal, prime Western, slabs, East St. Louis	0.005	0.11
DOWN		
Folic acid, USP, bots., fbs., dms., kilo or more, gram.	\$0.04	\$0.44
Hydrocortisone alcohol, bulk, bots., kilo lots or more, gram ..	0.65	2.25
Mercury metal, 76-lb./flask, net flask	2.00	235.00
Platinum metal, wks., oz.	1.00	54.00

All prices per pound unless quantity stated.



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Dr. Erle Ayres answers some pertinent questions on

THE AMINE-BORANES

"interest centers around their catalytic, stabilizing and antioxidant properties and their selective reducing action in non-aqueous solvents"



Dr. Erle Ayres, Ph.D., Duke University
Marketing Division, Callery Chemical Company

Q. Dr. Ayres, what are Amine-Boranes?

A. They are complexes of borane (BH_3) with amines. Most of the secondary and tertiary amines form stable complexes.

Q. What Amine-Boranes are offered?

A. Dimethylamine-Borane, $(\text{CH}_3)_2\text{NH}:\text{BH}_3$, Trimethylamine-Borane, $(\text{CH}_3)_3\text{N}:\text{BH}_3$, (white solids) and Pyridine-Borane, $\text{C}_5\text{H}_5\text{N}:\text{BH}_3$ (a liquid) are available now in large quantities. Other Amine-Boranes will be prepared as compounds with different properties are needed. We'd be glad to hear of your requirements for other Amine-Boranes.



Q. Can you make Amine-Boranes using primary amines?

A. At room temperature primary amines yield amino-boranes; at higher temperatures borazines or boron-nitrogen polymers result.

Q. Are Amine-Boranes stable in water? How do they compare with borohydrides in hydrolytic stability?

A. Trimethylamine-Borane in water loses about 2-3% of its active hydrogen per day. Higher tertiary Amine-Boranes should be even more resistant to hydrolysis. In general, Amine-Boranes hydrolyze more slowly than borohydrides, especially at intermediate (neutral) pH ranges.

Q. What happens to the Amine-Boranes in acid?

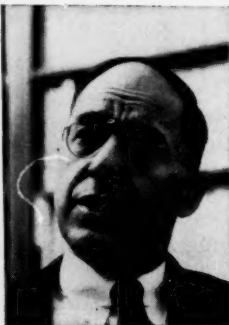
A. The Amine-Boranes are stable in glacial acetic acid. Dilute mineral acids hydrolyze them; with Lewis acids diborane is generated.

Q. What are some other solvents for Amine-Boranes?

A. Benzene, ethers and hexane. Pyridine-Borane is also very soluble in alcohol and pyridine.

Q. How toxic are Amine-Boranes?

A. These materials are not class A or B poisons; toxic effects are easily avoided by standard safety procedures that minimize skin contact, ingestion, and breathing of vapors.



Q. You mentioned stabilization. What do you mean?


A. Amine-Boranes slowly reduce aldehydes, ketones and some peroxides, and prevent their accumulation in systems subject to autoxidation. The reduction of carbonyl compounds thus stabilizes against later formation of acids and of color.

Q. Is the early interest in Amine-Boranes continuing?

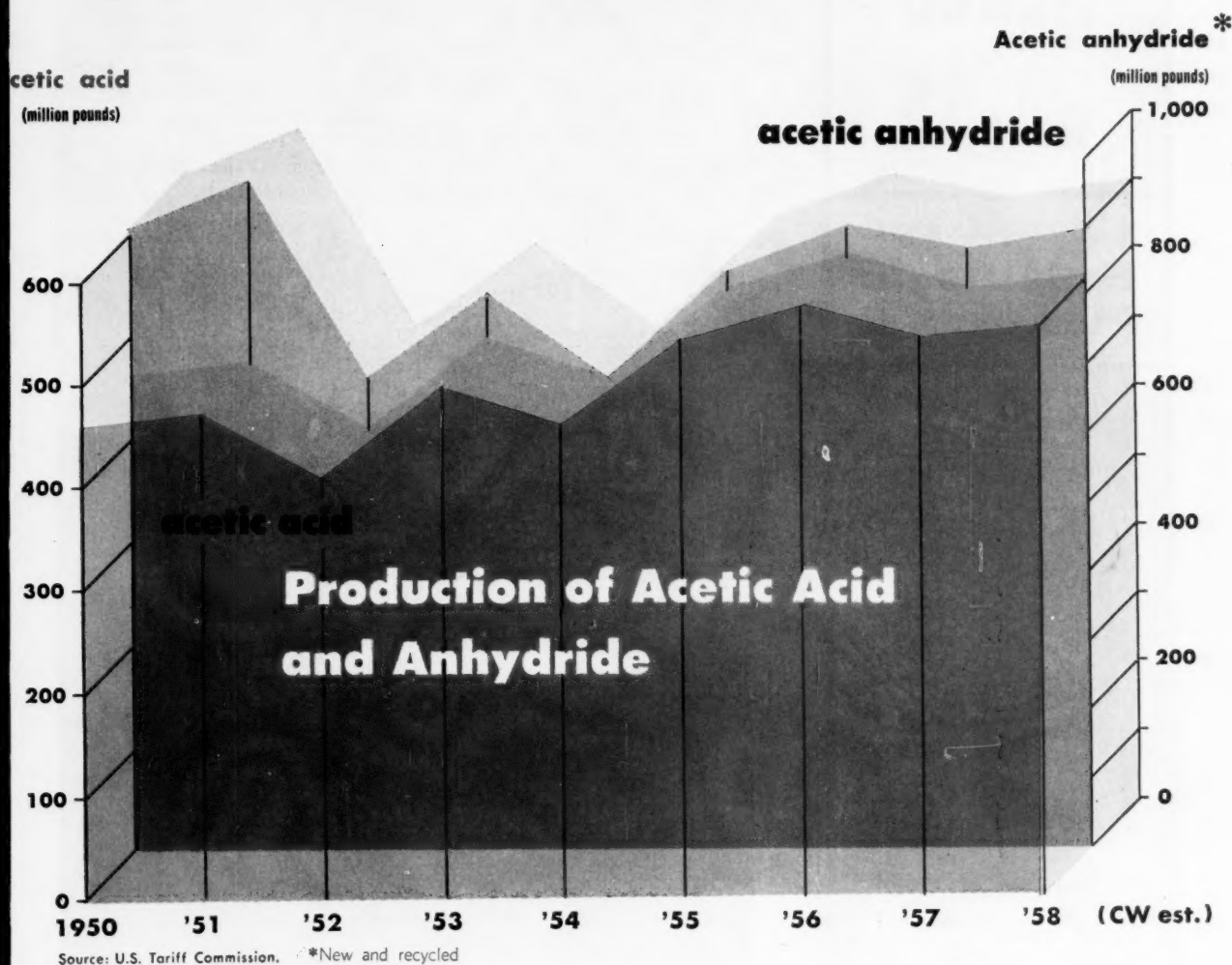
A. Yes. Inquiries and requests for samples have increased steadily since we announced the availability of these compounds about a year ago. A number of promising applications based on their reducing properties are nearly through the development stage. We believe a wide variety of industrial applications for these new compounds is assured by other research projects now in progress.



Write or phone for specific information on the Amine-Boranes
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MARKETS



Derivatives Cheer Acetic's Growth Outlook

Further information about Celanese Corp.'s plans to double its acetic acid capacity was uncovered by CW last week. Although Celanese indicated in its first announcement (CW, Sept. 27, p. 24) that the project will give the Pampa, Tex., plant 240-million-lbs./year capacity, the firm will concentrate on acetyl derivatives as well as on the acid.

The new plant expansion will feed processes used in making a variety of the acid's derivatives such as butanol, various esters, vinyl acetates, acrylates and other products currently in the Celanese development program.

Lagging Demand: Demand for acetic acid has been decidedly sluggish over the past three years because of irregular demands for acetic anhydride (primarily due to cutbacks in cellulose acetate production).

More than 70% of the 555 million lbs. of U.S. virgin acetic acid to be produced this year (as reported in terms used by the trade) will be channeled into production of acetic anhydride. And, although the '58 output estimates of acetic acid are 11 million lbs. higher than last year's actual production, it's a big 17 million lbs. less than the peak output of 572 million lbs. turned out in '56.

Ester Estimates: Another important outlet for acetic acid is production of acetic-derived esters, which will this year require more than 60 million lbs., about 11% of U.S.-produced virgin acid. The esters are important solvents used in manufacture of products such as celluloid, lacquer, perfumes, medicinals, artificial leather, synthetic flavors, polishes, cleaning fluids, cement, coated paper, explosives, textile sizing, linoleum, nail-

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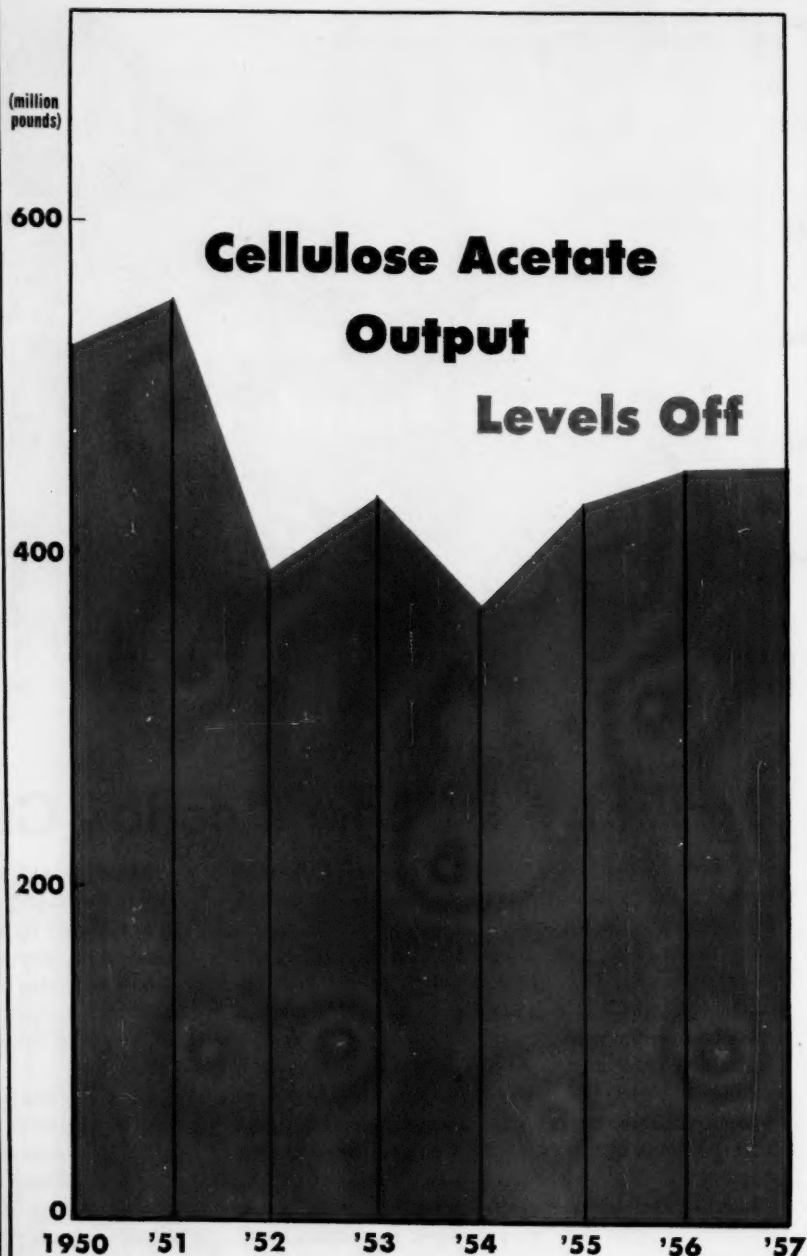
polish remover, printing compounds.

A small but rapidly growing demand for acetic acid is in production of chloroacetic acid, which will absorb about 7% of all acetic acid that is expected to be manufactured this year.

Chloroacetic acid production will likely hit 50 million lbs. this year—considerably more than the 27 million lbs. or so turned out in '50.

Chloroacetic acid is used in the production of carboxymethylcellulose; also as an antiredeposition agent in syndets—it prevents loosened dirt from resettling on clothes being washed; and in the synthesis of 2,4-dichlorophenoxyacetic acid, a selective weed killer.

Textile needs and production of acetate salts will, respectively, take



Source: U.S. Tariff Commission.



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MARKETS

U.S. 1958 End-Use Pattern

<i>Acetic Acid</i> (new)		<i>Acetic Anhydride</i> (new)	
Acetic anhydride	70%	Cellulose acetate*	70%
Esters	11%	Vinyl acetate	18%
Chloroacetic acid	7%	Aspirin	4%
Textiles	5%	Miscellaneous	8%
Acetate salts	2.5%		
Miscellaneous	4.5%		

*Category includes all forms: plastics, fibers (rayon), films, etc.

5% and 2.5% of the available acetic acid.

Anhydride Mixup: Acetic anhydride output closely parallels production of acetic acid, but there's considerable confusion about just how much anhydride is being produced in the U.S.

Industry estimates some 900 million lbs. of anhydride will be made this year; that's slightly more than the 890 million lbs. turned out in '57, and close to the record 909 million lbs. made in '56. The U.S. Tariff Commission's preliminary reports, issued a few weeks ago, put acetic anhydride output in '57 at 1.2 billion lbs., but this estimate has been revised, is now closer to 890 million lbs., industry sources tell *CW*.

Also misleading is the fact that U.S. Tariff Commission figures include both new and recovered acetic anhydride. It's estimated that some 60% of the government-reported anhydride production represents recycled material, which comes primarily from production of cellulose acetate. This implies that of the 900 million lbs. of acetic anhydride to be produced this year, only 360 million lbs. will be virgin material.

Cellulose Acetate Slump: Top outlet for acetic anhydride—hence a major prop for acetic acid production—is cellulose acetate. About 70% of the virgin acetic anhydride made this year will be used for acetate.

Demand for cellulose acetate during the past few years has been far from gratifying (*CW*, March 15, p. 47); noncellulosics have encroached on acetate fiber's traditional markets, and the slowly increasing demand for cel-

lulosic plastics has not made up for the fiber loss. From a record high production of 551 million lbs. in '51, cellulose acetate output has plummeted to about 440 million lbs. this year. Although makers of cellulose acetate are vigorously promoting acetate fibers, consensus is that only small gains are likely in the foreseeable future.

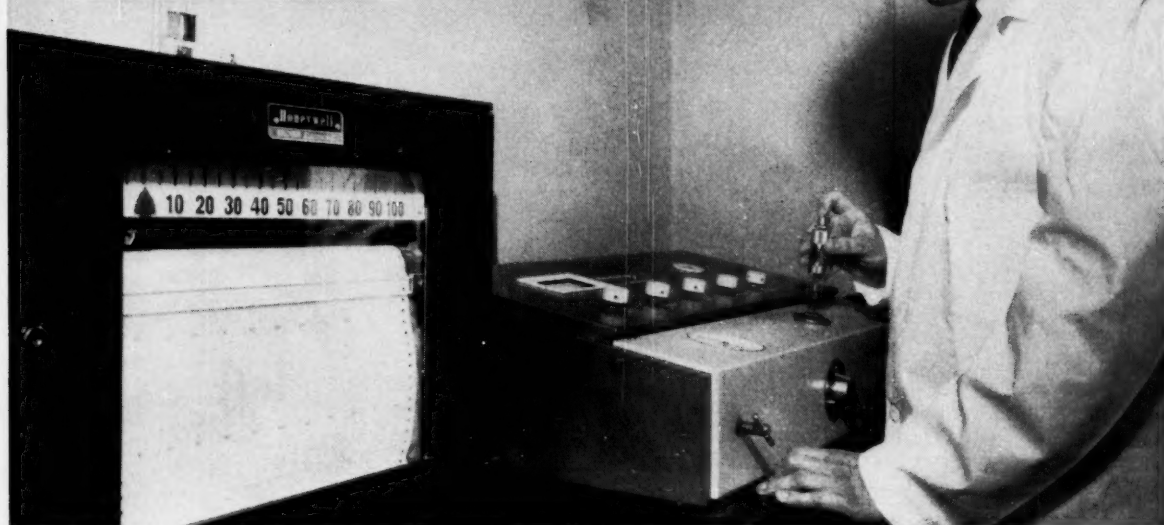
Paint Outlook Bright: About 18% of available virgin acetic anhydride is used to make vinyl acetate, and prospects in this area are promising. In seven years, polyvinyl acetate output increased 227%, from 30.5 million lbs. in '50 to more than 100 million lbs. in '57. Main stimulus behind this growth was, of course, surging demand for water-based polyvinyl acetate paints. An estimated 65 million gal. of water-based paints were sold last year, more than 25% of which were polyvinyl acetate types.

One industry spokesman predicts that polyvinyl acetate paint will take more than a 30% slice of the 90-million-gal. business in water-based paint expected for '62.

A relatively small outlet for acetic anhydride is manufacture of aspirin, which takes about 4% of virgin anhydride. (Aspirin production in '57 was a record 18 million lbs.—7 million lbs. more than were produced in '50.)

Clearly, there's little reason to anticipate a spectacular increase in acetic acid demand. The most optimistic forecast now is that acetic acid demand will grow at a moderate pace, closely paralleling the demand for acetic anhydride, and in turn, cellulose acetate.

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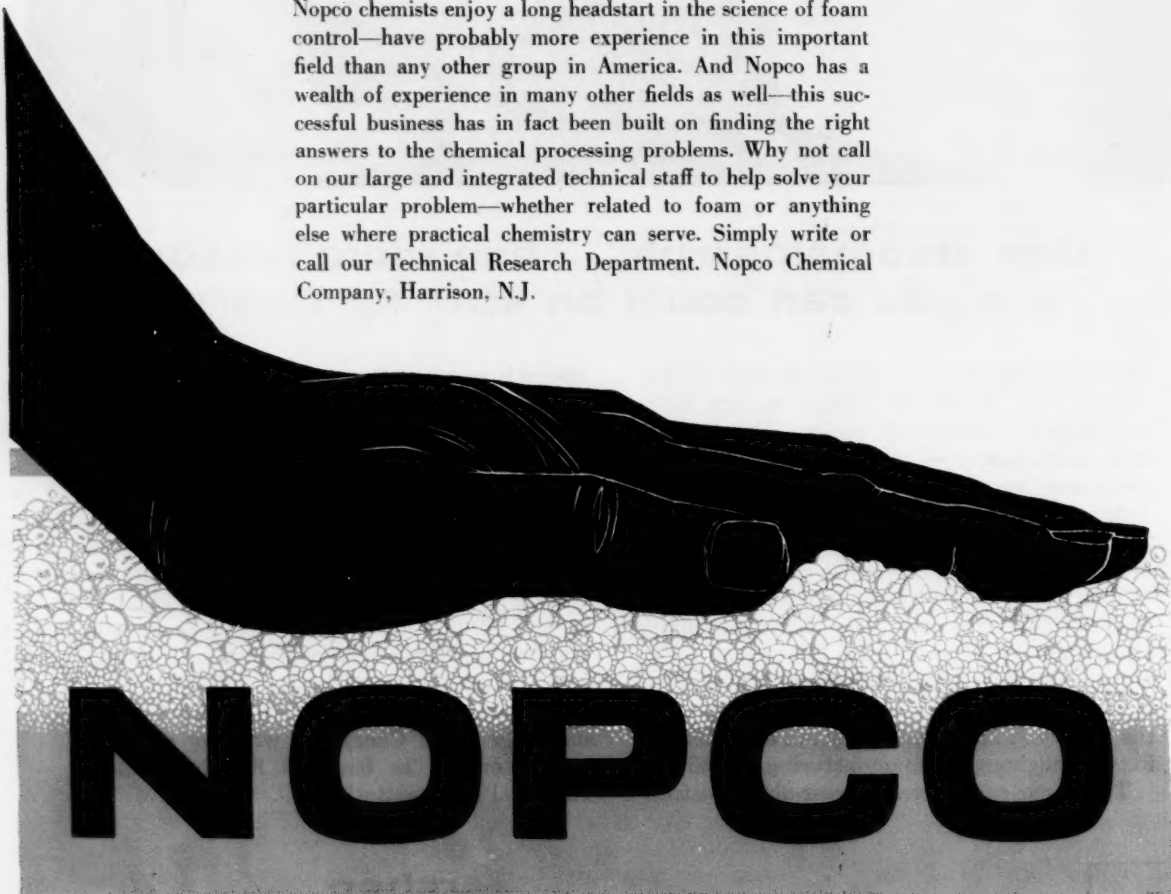
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. . . IN ANY PRODUCT where foam would otherwise be a problem

Nopco chemists enjoy a long headstart in the science of foam control—have probably more experience in this important field than any other group in America. And Nopco has a wealth of experience in many other fields as well—this successful business has in fact been built on finding the right answers to the chemical processing problems. Why not call on our large and integrated technical staff to help solve your particular problem—whether related to foam or anything else where practical chemistry can serve. Simply write or call our Technical Research Department. Nopco Chemical Company, Harrison, N.J.



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Advertising researchers swap ideas about future role of operations research for promotion studies.

Standing Up for Advanced Ad Research

For chemical advertising men—and their colleagues in other industries—one trend stood out at Advertising Research Foundation's annual meeting a few days ago. It was the fast-rising interest in "operations research" (OR) and its high-powered mathematics as a means of gauging promotion effectiveness, helping determine budgets and budget allocations.

Du Pont is already using the technique to optimize size and allocation of ad budgets, as it explained at the meeting. And OR specialists from Arthur D. Little, Alderson Associates and Case Institute described new OR twists that might make the idea attractive to more chemical companies.

Growing Stake: Much OR work in advertising has centered on consumer or ethical drug products. But

chemical producers have a growing stake in consumer promotion. Three reasons: industry's move to consumer products of recent years; the rush into synthetic fibers; and the upsurge in identity-building institutional advertising campaigns.

At Du Pont, advertising research manager Charles Raymond II reported on studies with "evolutionary operation" theory to predict optimum budgets. In this theory, researchers try to find mathematical models (formulas) that will relate the key variable factors of a product "system." As additional data and knowledge of the system is developed, the model is modified (hence the term "evolutionary"). Skillfully done, this technique explains the key relationships of the various factors with very limited ex-

perimental data (*CW*, March 31, '56).

Du Pont offered an example to show the need for this evolutionary work. In one study, its researchers tried to set up a model to relate a product's percent-of-market to the intensity of its advertising. It then produced charts that showed the mathematical chances of a specified advertising expenditure (expressed in dollars per product unit) to successfully achieve a specified market penetration.

The nonrevised model, Raymond says, had a low predictive power—i.e., it simply did not mathematically pinpoint market penetration. Evolutionary operation theory, with continuous revision of the model and of budgets in test areas, is intended to improve the prediction reliability.

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SALES

ity or "switch theory" is the direction of new advertising research at Arthur D. Little. One objective of this approach, explained senior staff consultant John F. Magee, is to set up equations to describe the probability of a customer's switching from one brand to another.

Switching rates, Little finds, are much less sensitive to seasonal and geographic differences than are gross sales. Moreover, the nature of an ad campaign has much to do with the rate of change.

In some instances, equations can show the relative merits of planning campaigns to retain old customers, convert noncustomers into customers or switch customers from a competing brand.

Little's OR work also indicates that the benefits from advertising can last a surprisingly long time—up to three years. Generally, most of their OR studies have increased client confidence in advertising and usually have led to increased budgets.

Most of Little's work has been on consumer products. But Magee feels that techniques can be developed to handle industrial products, too.

Choice of Goal: Alderson Associates' president, Wroe Alderson, stressed the difference in results that different profit objectives can produce when OR is applied to advertising. Long-term profit goals can lead to substantially higher ad budgets than do short-term profit policies. The long-term policy that aims at largest possible sales with less emphasis on immediate earnings is often the best for a company, new research shows.

There's been some success in correlating sales with advertising. Simple scatter diagrams, relating percent changes in each, have been found applicable in some cases. But often researchers must turn to more complex "multiple correlation" analyses.

Lining up with Little's Magee, Alderson emphasized the importance of "transition probabilities" in determining response to advertising. Concentration of ad effort at decisive switch points of consumer behavior ranks high in importance.

Another use of transition probability occurs in defining brand loyalty; the technique can pinpoint market share and the impact of advertising. Relatively small increases in brand loyalty can produce much larger

changes in share of markets. And, Alderson added, recent work in this field has indicated that it is not always wise to follow a competitor's increase in advertising.

Payoff Estimation: Defining "pay-off" as a ratio* of sales rates to the advertising rates, Case Institute's Russell L. Ackoff pointed to one important advantage of his definition: it allows estimation of error in the payoff. The method, Ackoff reported, indicates that large markets respond somewhat better to advertising than do smaller markets. He also says sales drop due to decreases in advertising



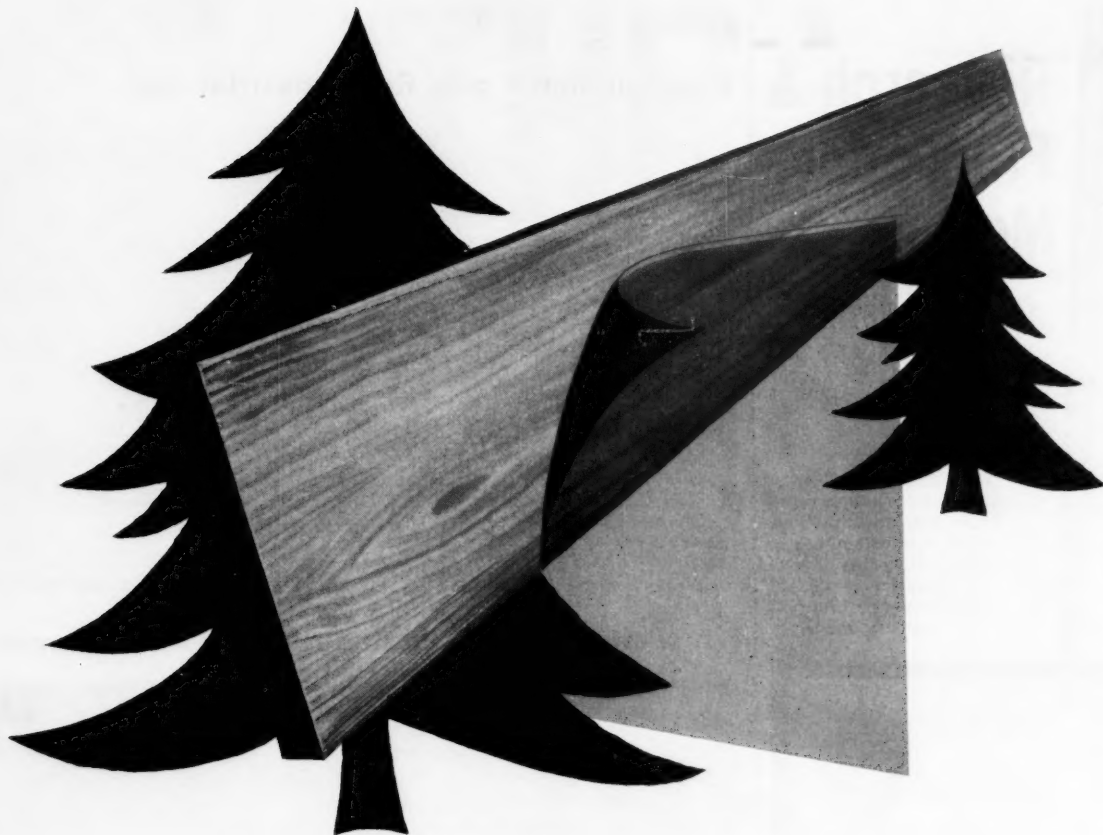
Alderson's Alderson: Profit goals influence advertising budgets.

are slower than sales increase produced by ad boosts.

Ackoff believes OR can set the proper level of ad spending to ensure maximum profit. He also offered an example showing that larger budgets should be given to areas where efficiency is greatest.

Ahead: The tenor of the meeting clearly suggested that operations research techniques for measuring advertising effectiveness and setting budgets need a good deal of work. There's a clear need, most felt, for developing new concepts, mathematical techniques and experimentation.

*In more refined terms, the payoff equals the difference between sales rate in test areas after advertising and the change in sales rate that would be expected if the advertising rate in control areas were unchanged, divided by the difference between advertising rate in test areas after advertising change and the change in advertising rate relative to control areas.



Another success story of Shawinigan acetal resins wood sealers

Shawinigan Resins' Butvar (polyvinyl butyral) and Formvar (polyvinyl formal) are used in sealers for pine lumber to prevent bleeding of knots, resin ducts, and heartwood. The sealers restrict bleed-through of terpinaceous matter which causes embrittlement and discoloration of topcoats particularly evident on white or light colored trim. In addition to their excellent sealing action, Butvar and Formvar based sealers give outstanding intercoat adhesion, holdout and build.

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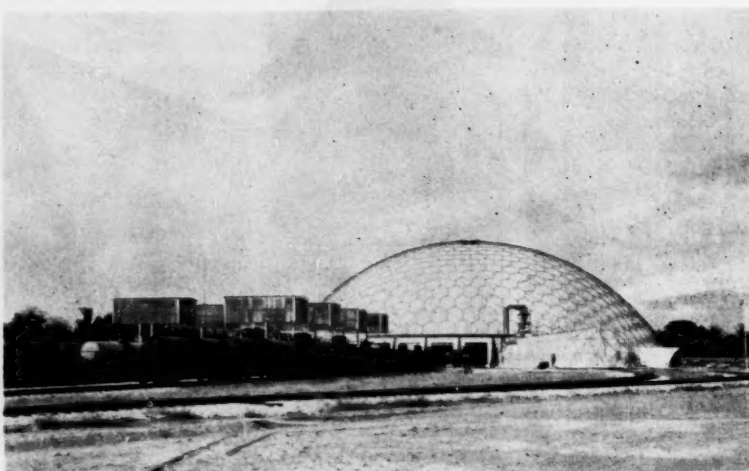
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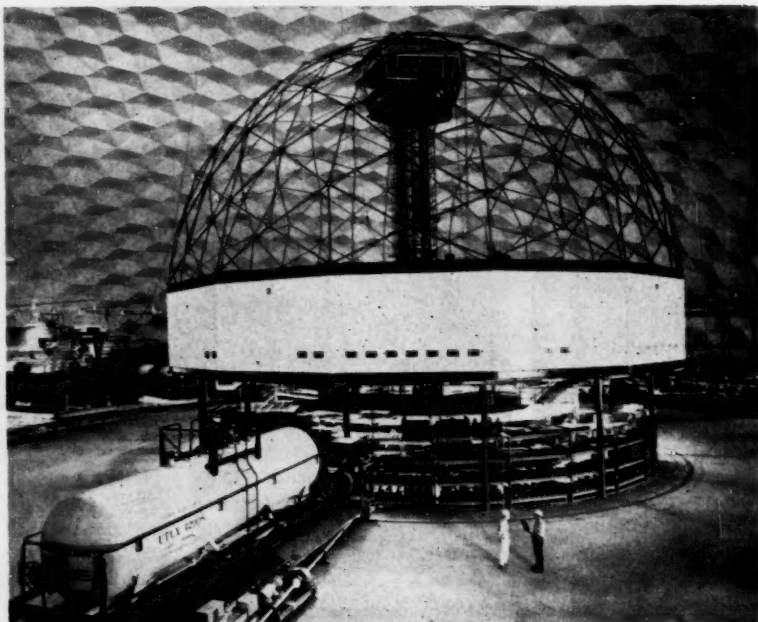
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SALES

Geodesic dome gets first industrial test . . .



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Tanker 'Repair in the Round'

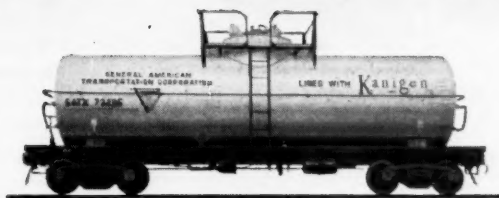
This week at Baton Rouge, La., tank-car "repairing in the round," gets under way at Union Tank Car Co.'s much-publicized "golden dome."

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THE TANK CAR NEWS OF 1958



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SALES

materials drawn from the central storage area beneath the tower arrive at the track simultaneously with the car, do not cross other work areas to impede repair of other cars.

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DATA DIGEST

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• **Anionic Surfactants:** Sixteen-page brochure tabulates physical data for Igepon surfactants, shows application of each compound in various industrial operations. Special sections on solubility, stability, literature references and shipping information are included. Antara Chemicals, division of General Aniline & Film Corp.

• **N-acetyl-p-aminophenol:** Brochure, 24 pages, describes therapeutic utility of N-acetyl-p-aminophenol as an analgesic-antipyretic agent and reviews literature on chemical, pharmacological and clinical aspects. New York Quinine & Chemical Works (50 Church St., New York 8).

• **Naphthenic Acids:** Data sheet offers specifications of three grades of naphthenic acids, suggests applications in emulsions, corrosion inhibitors, resin-sand binding, ore flotation and extension of high-acid-number naphthenic acids. Sun Oil Co.

• **Industrial Fungicides:** Wall chart lists properties, suggested applications and recommended treatment levels for 22 industrial fungicides. Nuodex Products Co., division of Heyden Newport Chemical Corp.

• **Antioxidants:** New brochure discusses comprehensive test program on use of antioxidants to retard oxidation in fishery products. Eastman Chemical Products, Inc. (New York).

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POSITIONS VACANT

Junior Sales—Career position open in St. Louis Branch Office for technically trained young man wishing to enter sales and sales management field. Prefer chemistry or chemical engineering education with at least 2 years college. Position starts with office sales liaison with advancement to field sales engineering or junior sales management. Write giving full data. P-9070, Chemical Week.

Sales Branch Supervisor—Career Opening—St. Louis Branch Office—Small, aggressive, well-established national company. Chemicals and pharmaceuticals. Applicant must be able to organize and manage field sales engineers (10) and handle executive sales. Technical background required. Write giving complete personal data. P-9071, Chemical Week.

SELLING OPPORTUNITY OFFERED

Mfg'ers Reps calling on Industrial Jobbers wanted to represent eastern mfg'r of stainless steel screwed pipe fittings. Sales commission. Choice territories avail. Advise of current lines. RW-9050, Chemical Week.

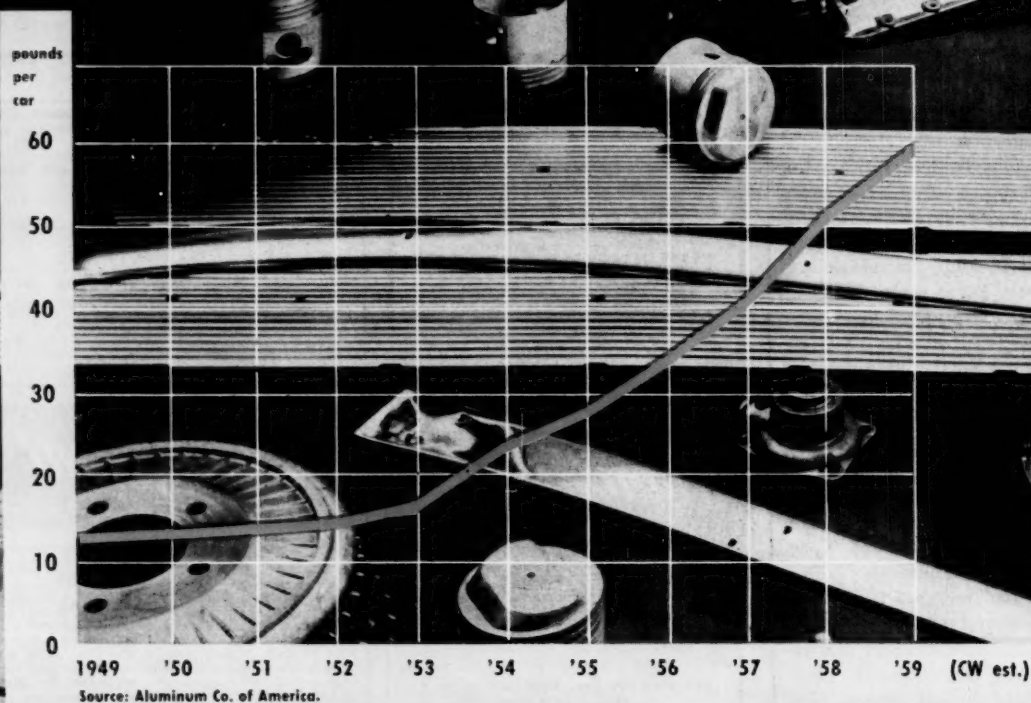
POSITIONS WANTED

Technical Sales or Service—Graduate chemist with 10 years experience in sales development and service desires direct chemical or industrial sales position. Successful experience in sales development of textile chemicals and yarns. PW-9041, Chemical Week.

Electro-Plating Engineer. Graduate chemist, age 44; 22 years diversified experience, extensive background in all phases of metal finishing surface treatments and corrosion problems. Equipment design process control research and development. Seeks responsible position Metropolitan New York City area. PW-9062, Chemical Week.

CHARTING BUSINESS

MORE ALUMINUM GOING INTO AUTOMOBILES



More Aluminum Will Ride in '59 Autos

Aluminum continues to increase its importance in automobile manufacture. Next year, based on an estimated 5.5-million-car output, about 325 million lbs. of aluminum will be channeled into the auto industry—an average of about 59 lbs./car.

By end of this year, some 225 million lbs. of aluminum will have been consumed in the estimated 4.3 million cars produced. This is about 52.4 lbs. per car.

Use Breakdown: Next year, about 11 lbs./car of the light metal will be used as trim; this year, 9 lbs./car will be used; in '57, 5.6 lbs.

Automatic transmission assemblies take the largest share of the metal, requiring an average of 20 lbs./unit. Engine parts take close to 17 lbs./car. The metal is also used in power brakes, steering equipment and in similar applications.

About 6 lbs./car is needed for replacement parts and for deoxidizing steel. At least 1 lb./car is needed as an alloy ingredient for zinc die castings. This is in addition to the average aluminum use per car.

And trade talk has it that all-aluminum engines will soon be the rule rather than the exception.

98-100%

FORMIC ACID

Does 98-100% Formic Acid Have Industrial Application For You?

Don't confuse this unique formic acid (98-100% HCOOH) with ordinary formic in strengths of 90% or less. Produced *only* by Baker & Adamson, this is a product with special and highly interesting properties. We believe it has many hitherto untapped industrial applications—one of which may be *yours!*

In general, formic acid exhibits the following characteristics:

- ✓ clear, colorless liquid with a pungent odor
- ✓ miscible in all proportions with water

- ✓ soluble in water, alcohol and ether
- ✓ molecular weight 46.03, melting point 8.3 C, boiling point 100.8 C.

B&A 98-100% Formic Acid is a specially distilled product produced under carefully controlled conditions to meet rigid purity standards. We invite you to investigate this product for your own applications. With its high strength and exceptional purity, it may well be the answer to one of your problems. It is readily available from your nearest B&A sales office in 1-lb. and 5-lb. bottles, and 6½-gallon carboys.

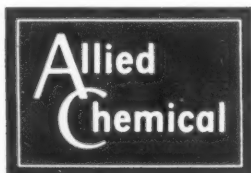
88-90% Formic Acid

Baker & Adamson also produces 88-90% Formic Acid, which has many applications, including:

- *semiconductor production
- *textile dyeing and finishing
- *nucleonics research

For cleaning up devices using dissimilar metals it replaces hydrochloric or nitric acid.

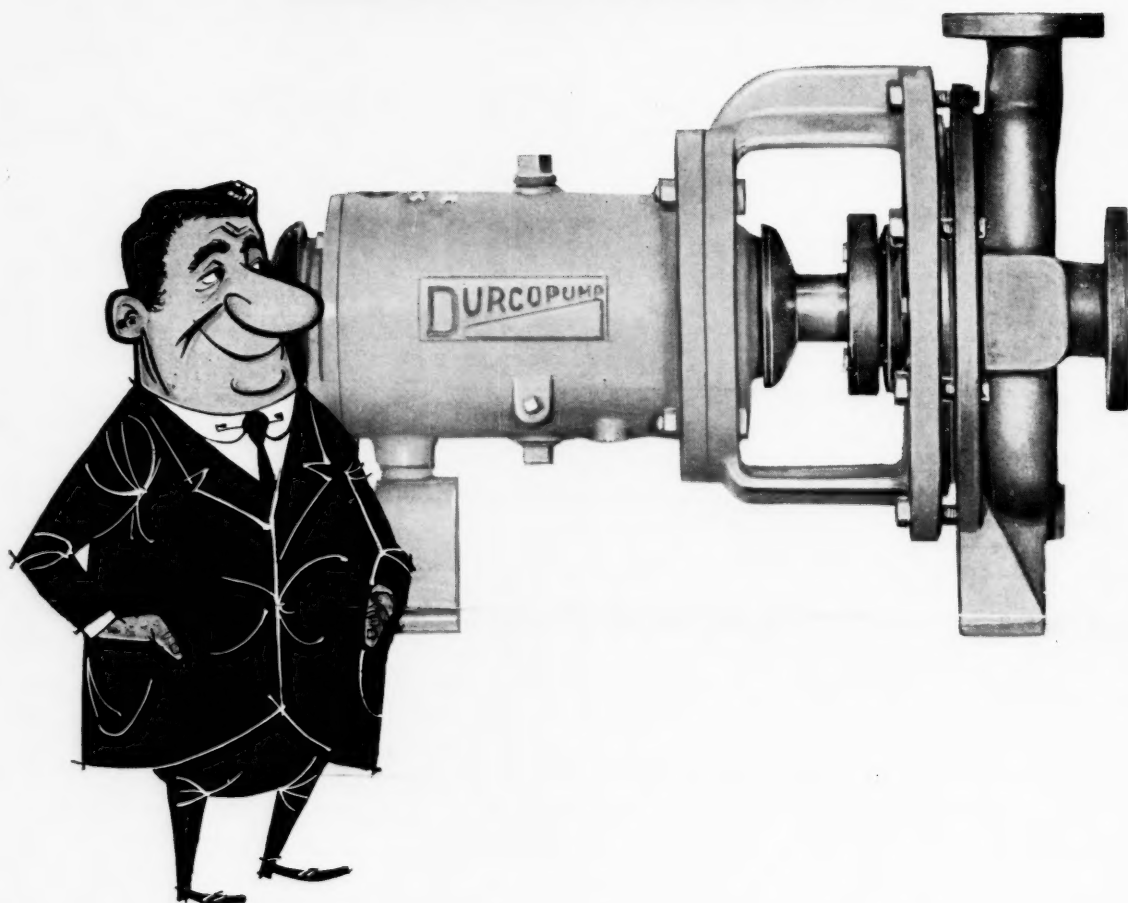
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AND MORE DEPENDABLE!**



Series H Durcopumps are designed and built to give maximum service at minimum overall cost when handling severely corrosive solutions. These pumps are built with capacities from $\frac{1}{2}$ to 3500 gpm, and with heads to 345'. They are available in twelve standard corrosion resisting alloys. When you are looking for a better chemical pump, look to Durco.



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